MAY 12 1959

MAY 1959

Volume 54 Number 5

nary

ine

FOUNDED 1905

IBRARY
RECEIVED
R 28 1959

IN THIS ISSUE

Light Horse and Pony Practice

Infectious Atrophic Rhinitis

Retirement Act of 1959

The Technic of Sialography in the Dog

Colored Photography of Cataractous Lens

Complete Index on Page VI

Jen-Sal

powerful new skin and hair detergent for dogs and cats

THIONIUM *Shampoo*

A foaming, cleansing, deeply penetrating agent for therapeutic shampoo and spot treatment of nonspecific dermatoses, seborrheic dermatoses, eczemas and fungal skin infections. Just a teaspoonful of Jen-Sal exclusive Thionium Shampoo gives gallons of power-packed suds. Its skillful blend of fresh aroma, pharmaceutical efficiency and distinctive packaging will pamper the taste of your most discriminating client. Supplied in gallons and 6 oz. polyethylene dispens-a-jars. Order from your Jen-Sal Service Center or representative for immediate delivery.

Jensen-Salsbery Laboratories, Inc.
Kansas City, Missouri

AVAILABLE

REPRINTS

OF REPORTS

OF EXPERIENCE

WITH

CHLOROMYCETIN®

(CHLORAMPHENICOL, PARKE-DAVIS)

OPHTHALMIC

PENETRATION OF CHLORAMPHENICOL U.S.P. (CHLOROMYCETIN) INTO THE EYE
by Irving H. Leopold, Anna C. Nichols and Adolph W. Vogel. *Arch. Ophthalmology*, 44: 22 (July) 1950.

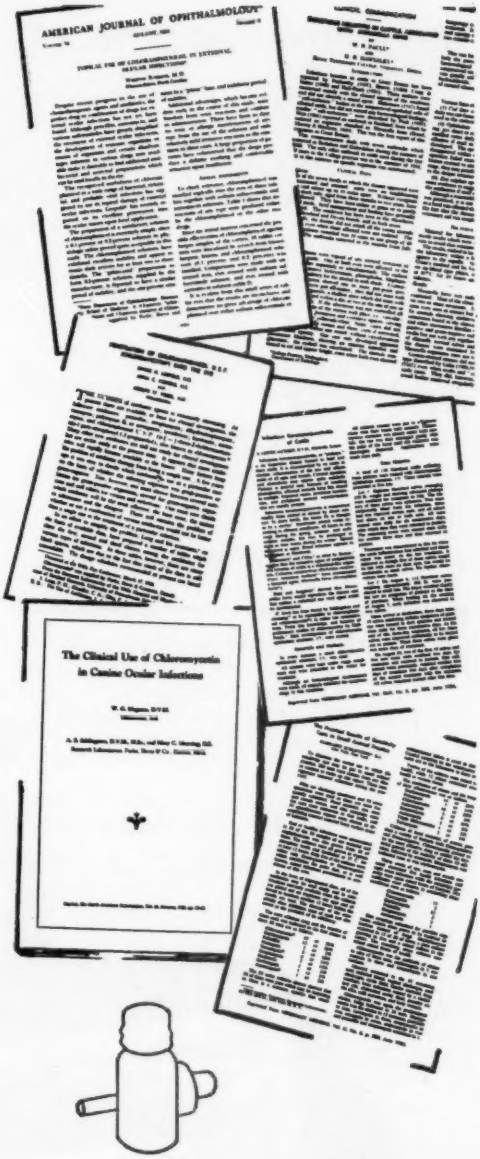
INFECTIOUS KERATOCONJUNCTIVITIS OF CATTLE
by S. Lester Jackson. *Vet. Med.*, 49: 260 (June) 1954.

THE PRACTICAL RESULTS OF SENSITIVITY TESTS IN SMALL ANIMAL PRACTICE
by Margaret Schlichting. *Vet. Med.*, 51: 280 (June) 1956.

TOPICAL USE OF CHLORAMPHENICOL IN EXTERNAL OCULAR INFECTIONS
by Winston Roberts. *Am. J. Ophthalmology*, 34: 1081 (Aug.) 1951.

THE CLINICAL USE OF CHLOROMYCETIN IN CANINE OCULAR INFECTIONS
by W. G. Magrane, A. S. Schlingman and Mary C. Manning. *North Am. Vet.*, 34: 39 (Jan.) 1953.

INFECTIOUS KERATITIS IN CATTLE, ASSOCIATED WITH MORAXELLA BOVIS
by W. B. Faull and M. B. Hawksley. *Vet. Rec.*, 66: 311 (May 29) 1954.



THESE AND OTHER PUBLICATIONS ON CHLOROMYCETIN AVAILABLE ON REQUEST

VETERINARY DEPARTMENT

PARKE, DAVIS & COMPANY

DETROIT 32, MICHIGAN • MONTREAL 9, QUEBEC

for positive immunity with greater safety

ARMOVAC®-A

Hog Cholera Vaccine—Modified Live Virus—Rabbit Origin

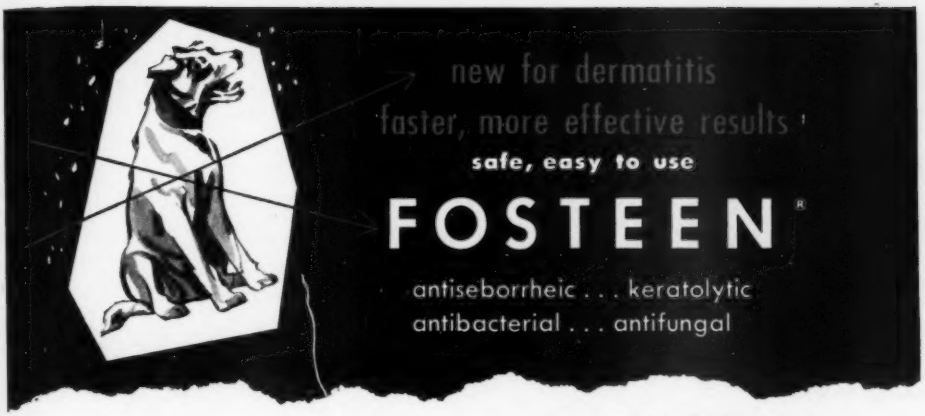
- *dual modification—both swine and rabbit attenuated*
- *prepared from the most antigenic and least virulent seed virus available*
- *of rabbit origin, therefore will not transmit other swine diseases*
- *successfully used on millions of swine*
- *minimizes postvaccination difficulties—provides solid immunity*

For use with Antrate®- H.C. or antiserum. Available in 4 convenient sizes: 5, 10, 25, 50 dose vials, lyophilized, diluent supplied.

Also available: Armovac for use without antiserum.

Armour Veterinary Laboratories, Kankakee, Illinois

ARMOUR



Use as a therapeutic shampoo in eczemas, seborrheic dermatitis, scaly skin, otitis externa, nonspecific dermatitis, demodectic mange, fungus infections.

***Available** in 4.5 oz. and 3 lb. jars.*

Clinical results in 592 dogs

Condition	Total Number	Good to Excellent Results
Weeping dermatitis ("Moist Eczema")	217	200-(92%)
Dry dermatitis ("Summer Eczema")	238	190-(80%)
Seborrheic dermatitis (including otitis externa)	137	127-(93%)

The effectiveness of FOSTEEN is provided by Sebulytic® (dioctyl sulfosuccinate, alkyl aryl polyether sulfonate and lauryl sulfoacetate) a new combination of surface active cleansing, penetrating and wetting agents with remarkable *antiseborrheic, keratolytic, antibacterial* and *antifungal* action—enhanced by sulfur 2%, salicylic acid 2% and hexachlorophene 1%.

order FOSTEEN from these distributors

A. J. Buck & Son
Baltimore 13, Md.

Arizona Veterinary Supply Co., Inc.
Mesa, Ariz.

Barber Veterinary Supply Co., Inc.
Richmond 20, Va.

Central City Chemical Consolidated
San Francisco 5, Calif.

Central Surgical Supply Co.
Fitchburg, Mass.

Chicago Veterinary Supply, Inc.
Chicago 18, Ill.

Columbus Serum Company
Columbus 7, Ohio
Indianapolis, Ind.

Edwards Veterinary Supply Co.
Kansas City 8, Mo.

Frank E. Lentz Co.
Philadelphia 4, Pa.

Gertrude Devine Veterinary Supplies
Goshen, N. Y.

Holmes Serum Company
Springfield, Ill.

L. A. Mosher Co.
Atlanta, Ga. — Louisville, Ky.
Albany, Ga. — Raleigh, N.C.
Miami, Fla. — Memphis, Tenn.

Mencimer Veterinary Supply
Ogden, Utah

Miller Veterinary Supply Co.
Fort Worth 4, Tex.

Nelson Laboratories
Sioux Falls, S.D.

Northland Veterinary Supply Co.
St. Paul 4, Minn.

Northwest Veterinary Supply Co.
Oregon City, Ore.
Seattle, Wash.

Pioneer Laboratories
Houston, Tex.

Sharpe & Vejar Company
Los Angeles 64, Calif.

Standard Veterinary Products Co.
New York 1, N.Y.

Wisconsin Biological Supply Co.
Madison 3, Wis.

H. C. Burns Co., Inc.
Oakland, Calif.
Huntington Park, Calif.
Portland, Ore.

Write for clinical reprint and samples. Available only to the profession.

Westwood PHARMACEUTICALS
468 Dewitt Street, Buffalo 13, New York

EDITOR
C. M. Cooper, D.V.M.

ASS'T EDITOR and ADVERTISING MANAGER
Charles Walters, Jr., B.S., M.A.

STAFF EDITORS

Animal Health
R. R. Dykstra, D.V.M.

Nutrition
Morris Erdheim, D.V.M.

Poultry Practice
W. R. Hinshaw, D.V.M., Ph.D.

Public Health
James H. Steele, D.V.M., M.P.H.

Parasitology
A. O. Foster, B.A., M.A., Sc.D.

Clinic
Clifford L. McGinnis, D.V.M.

Practitioner's Laboratory
William L. Sippel, V.M.D., Ph.D.

EDITORIAL CONSULTANTS

Robert P. Knowles, D.V.M.

James Archibald, D.V.M., M.V.Sc., Dr. Med. Vet. (Giessen), M.R.C.V.S.

Mark L. Morris, Sr., D.V.M.

W. O. Brinker, D.V.M., M.S.

William G. Magrane, D.V.M., M.Sc. (Med.)

L. E. Fisher, D.V.M.

Wayne H. Riser, D.V.M., M.S.

General Practice

Light Horse and Pony Practice 227
S. K. HARVEY, D.V.M.

Infectious Atrophic Rhinitis 230
WILLIAM P. SWITZER, D.V.M., Ph.D.

Coccidioidomycosis in Animals 233
KEITH T. MADDY, D.V.M., M.P.H.

Capsules of Adrenal Glands in Cattle . . 243
JOHN M. DELPHIA, M.S., D. F. EVELETH, Ph.D., D.V.M., F. M. BOLIN, D.V.M. and M. L. BUCHANAN, M.S.

Practitioner's Laboratory 245
WILLIAM L. SIPPEL, V.M.D., Ph.D.

Small Animal Practice

The Technic of Sialography in the Dog . . 247
A. J. CAWLEY, D.V.M., M.V.Sc., BRIAN SORRELL, D.V.M.

The Animal Bite Problem 251
DUANE BROBST, D.V.M., M.P.H., HENRY M. PARRISH, M.D., M.P.H. and FRANK B. CLACK, V.M.D., M.P.H.

The Case of Carre Virus Inclusion Bodies . 257
FRED B. OGILVIE, D.V.M.

A.A.H.A. Meets in Colorado Springs . . . 259

Colored Photography of Cataractous Lens . 268
GEORGE E. PARK, M.S., M.D., W. C. DOLOWY, M.S., D.V.M. and A. C. IVY, Ph.D., M.D.

Vol. 54 May 1959 No. 5

Veterinary Medicine

A Monthly Magazine
Devoted to the Promotion of the Art and Science of Veterinary Medicine

Published Monthly by the

Veterinary Medicine Publishing Co., Inc.

Mrs. Robert L. Anderes, President
Suite 803 Livestock Exchange Building
Kansas City 2, Missouri
Telephone: Victor 2-2985

Registered in U. S. Patent Office

SUBSCRIPTION RATES: ONE YEAR $6.00; TWO YEARS, $11.00; THREE YEARS, $15.00. SINGLE COPY, 60c. U. S. FUNDS. POSTAGE PREPAID. AUTHORIZED AGENTS WILL PRESENT LETTER OF COLLECTION AUTHORITY. PAY NO MONEY TO OTHERS.

SECOND CLASS PRIVILEGES AUTHORIZED AT KANSAS CITY, MO.

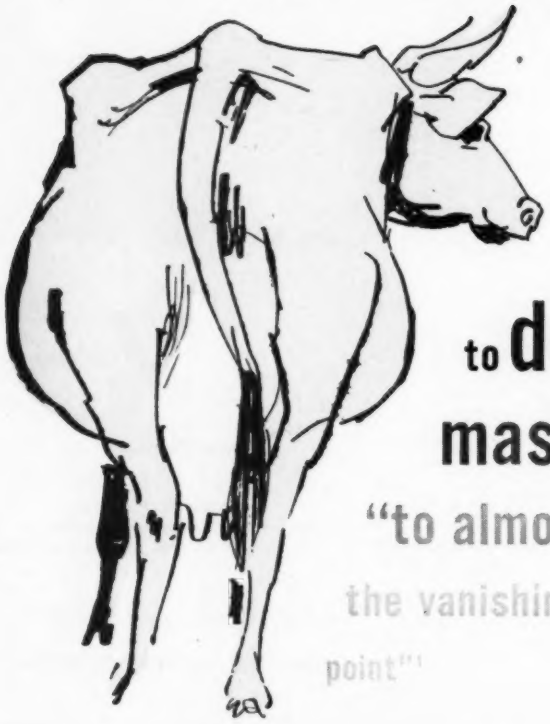
ALL MATTER APPEARING IN THIS PUBLICATION IS COPYRIGHTED. NO PART OF IT MAY BE REPRODUCED WITHOUT WRITTEN PERMISSION. PERMISSION WILL BE GIVEN IF THE PURPOSE IS UNOBJECTIONABLE. IF THERE IS ANY QUESTION AS TO THE PROPRIETY OF REPRODUCTION THE AUTHOR WILL BE CONSULTED.

CHANGE OF ADDRESS: PROMPT NOTICE OF CHANGE OF ADDRESS IS REQUESTED TO ASSURE ACCURATE MAILING. GIVING OLD AND NEW ADDRESS. ADDRESS ALL COMMUNICATIONS TO VETERINARY MEDICINE, SUITE 803 LIVESTOCK EXCHANGE BLDG., KANSAS CITY 2, MISSOURI.

COPYRIGHT, 1959, BY THE VETERINARY MEDICINE PUBLISHING CO., KANSAS CITY 2, MISSOURI.

Special Features

News Comment XVII
Properdin 229
Nutrition Needs During Lactation 232
Human Leptospirosis 232
Dean Leasure Visits India 242
Legal Environment of Medical Science . . 246
Morris Animal Foundation Names New Members 250
Small Animal Clinic 260
Retirement Act of 1959 263
Self-Employed Veterinarians and Retirement 264
Results of Sensitivity Tests in 1958 266
MARGARET SCHLICHTING, B.A.
Editorial 266
The Meeting Circuit 275
Investment Management 277
Distaff XXXIV
MRS. E. F. (HAZEL) EBERT)
Reader's Service XL
Veterinary Calendar XLI
Examinations XLVIII



to decrease mastitis

"to almost the vanishing point"[1]

FURACIN®-PENICILLIN GEL *veterinary*

Furacin with penicillin produces an enhanced antibacterial action that is at least additive, and may be truly synergistic. The combination covers a broader bacterial spectrum of gram-positive and gram-negative organisms than either agent alone.

Indications: **For treatment of bovine mastitis caused by Staphylococcus aureus; Streptococcus agalactiae and dysgalactiae; Escherichia coli and Pseudomonas aeruginosa sensitive to Furacin.**

For use as a topical ointment in treatment of wounds, pyodermas, in otic and ophthalmic infections.

SUPPLIED: A crystalline suspension of Furacin 2% and procaine penicillin G (13,333 units per cc.) in peanut oil with aluminum stearate 3%. In rubber-capped vial of 100 cc.; applicator tube of 7.5 cc., box of 12.

1. Kakavas, J. C., et al.: J. Am. Vet. M. Ass. 119:203 (Sept.) 1951.

NITROFURANS—a *new* class of antimicrobials—neither antibiotics nor sulfonamides

EATON LABORATORIES, NORWICH, NEW YORK

All Eaton Veterinary Specialties Are Available Through Your Professional Veterinary Distributor

Now...
cerebral depression
for 20-90 minutes
depending on
the agent you choose
for anesthesia:

PENTOTHAL® (Thiopental, Abbott) / **NEMBUTAL®** (Pentobarbital, Abbott) / **COMBUTHAL®** (PENTOTHAL Sodium—NEMBUTAL Sodium)

Various veterinary surgical procedures very often call for individualized anesthesia, and Abbott Laboratories offers full anesthetic selectivity with these three agents: PENTOTHAL for ultra-short-acting anesthesia . . . NEMBUTAL for short-acting surgical depression . . . and COMBUTHAL for intermediate duration. With any one of the three—

Onset of action is prompt . . . surgical hypnosis being achieved in just 3 to 5 minutes, from a single intravenous dose.

Degree of cerebral depression and duration of anesthesia are easily controlled, depending on the dose and the specific agent you select.

Optimal skeletal muscle relaxation accompanies anesthesia, facilitates uninterrupted surgery; a second dose is rarely needed.

Side effects are minimal with these agents, and there is little danger of cumulative effect. Patients awaken quickly, to a quiet, uncomplicated postoperative period.

PENTOTHAL, NEMBUTAL and COMBUTHAL are available from the Veterinary Department, Abbott Laboratories, North Chicago, Illinois; your Abbott representative or your distributor.

Abbott

Veterinary Department • ABBOTT LABORATORIES • NORTH CHICAGO, ILLINOIS

These words on Mastitis appear in the Spring (1959) Issue of The Surge News:

"With his training, skill, experience and all-round knowledge, your Doctor of Veterinary Medicine can cure most of your cows of mastitis and he can point the finger at those cows that are past redemption.

"That seems to get your problem handled as far as it goes, but it does not go far enough. Up to now — your veterinarian has no magic mixture, compound or injection that will keep your cows from getting sick again. You are their sole protector and guardian — you are their only defense against mastitis.

"Mastitis is being controlled in some herds by Good Herdsmanship plus Good Cow Milking. It can probably be controlled in the same way in your herd if you can find the time to do the things that will have to be done."

© Babson Bros. Co., 1959

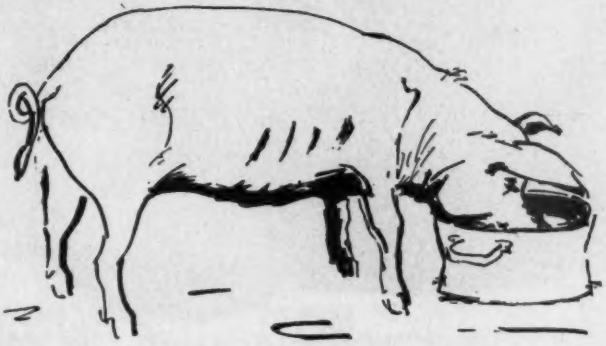
BABSON BROS. CO.

2843 W. 19th Street • Chicago 23, Illinois

SURGE

ATLANTA • DALLAS • KANSAS CITY • MINNEAPOLIS
SACRAMENTO • SEATTLE • SYRACUSE • TORONTO

New, convenient, efficient way to treat porcine necrotic enteritis due to Salmonella choleraesuis



CLINICAL RESULTS: Field tests[1,2,3,4] indicate perorally administered FURACIN to be safe and specific for uncomplicated Salmonella infections and necrotic enteritis of swine and beneficial in other nonspecific enteric conditions of swine. Controlled laboratory studies[5,6] demonstrate that FURACIN Water Mix in drinking water for 7 consecutive days prevents mortality and aids in maintaining normal growth of pigs infected 2 days prior to treatment.

METHOD: Add FURACIN Water Mix to the drinking water in proportions of 330 Gm. (1 carton) to each 36 gallons. Continue medicated water for at least 7 days.

FURACIN®

BRAND OF NITROFURAZONE

WATER MIX

SUPPLIED: Carton of 330 Gm. Available from your professional veterinary distributor.

REFERENCES: 1. Vickers, C. L.: Personal communication. 2. Filion, R., and Trepanier, M.: Personal communication. 3. Lannek, N., and Brag, S.: Vet. Med. 49:75-78 (Feb.) 1954. 4. Felgate, C. A., and Swann, H. C.: Vet. Rec. 68:259-262 (May 5) 1956. 5. Guthrie, J. E.: Vet Med. 47:307-314 (Aug.) 1952. 6. Guthrie, J. E.: Personal communication.

NITROFURANS —a *unique* class of antimicrobials—neither antibiotics nor sulfonamides

EATON LABORATORIES, NORWICH, NEW YORK

Outstanding effectiveness in the routine treatment of CANINE DIARRHEA

FURADEX® ORA-BOLS™ veterinary

Complete remissions in 37 of 38 dogs[1]

FURADEX "... shortened the duration of diarrhea in comparison with previously used drugs, and in most cases produced an apparent complete recovery ... (The diarrhea) generally ceased in 2 to 7 days without any side effect due to medication."[2]

Containing FURACIN® (brand of nitrofurazone) in an excipient of dextrose for peroral therapy, FURADEX is achieving striking results in bacterial and nonspecific diarrheas and in diarrheas associated with other diseases such as distemper and hepatitis. FURADEX has the advantage of being highly palatable to dogs, which facilitates treatment,[1,2] and is a point of superiority over other preparations.

SUPPLIED: 50 mg. scored ORA-BOLS, bottle of 100.

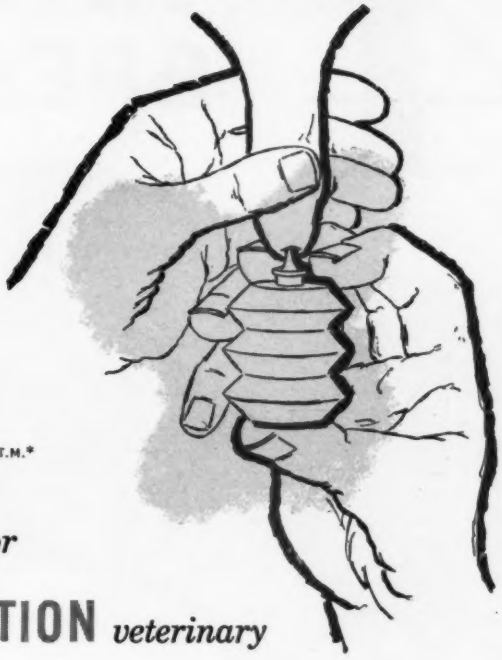
REFERENCES: 1. Pollock, S.: Control of Nonspecific and Specific Enteritis in the Dog; read at the First Regional Conference on the Nitrofurans in Veterinary Medicine, Wilmington, Delaware (June 5, 1958). 2. Fisher, G. W.: Oral Use of Furadex in Canine Diarrhea, N. A. Vet. **39**:133-134 (Mar. 15) 1958.

ORA-BOLS™ is the Eaton trade mark for small bolus-shaped tablets.

Available through your professional veterinary distributor.

NITROFURANS ... a *new* class of antimicrobials ... neither antibiotics nor sulfonamides

EATON LABORATORIES, NORWICH, NEW YORK



for **MASTITIS** *of*

dry and lactating cows

NEW SQUEEJET™*

single-dose dispenser for

FURACIN® SOLUTION *veterinary*

brand of nitrofurazone

- delivers one full dose
- is discarded after using
- saves time
- is convenient, especially when a number of cows are to be treated
- unique package

*design patented

FURACIN has been shown to be strikingly effective in controlling mastitis under field conditions.[1,2] Of 7,123 lactating cows with acute mastitis, fair to excellent results were obtained in 5,597 (78%). Of 3,418 dry cows which had had mastitis during their previous lactating period, fair to excellent results were obtained in 3,104 (90%).

SUPPLIED A water-miscible liquid of FURACIN 0.2% in polyethylene glycol and water. Single-dose SQUEEJET disposable dispenser of 30 cc. Still available, bottles of 500 cc. with rubber stopper and 1 gal.

1. Mires, M. H., and Chadwick, R. H.: Vet. News **10**:3 (Jan.-Feb.) 1947. 2. Mires, M. H.: J. Am. Vet. M. Ass. **117**:49 (July) 1950.

All Eaton Veterinary Specialties Are Available Through Your Professional Veterinary Distributor.

NITROFURANS—a *new* class of antimicrobials— neither antibiotics nor sulfonamides

EATON LABORATORIES, NORWICH, NEW YORK

4 SQUIBB VETERINARY SPECIALTIES

Topical corticosteroid-antibiotic therapy for superficial infections of the external ear and ear canal (otitis externa, running ears, abscesses, etc.), and many dermatologic disorders of small animals. Recommended for use in association with Mycostatin Ointment Veterinary for anti-inflammatory, anti-bacterial, anti-fungal therapy.

Florinef-S is indicated for otitis externa (running or abscessed ears); dermatitis (eczematoid, contact), anogenital pruritis, pustular folliculitis and related infections. Florinef-S reduces erythema and swelling, suppresses eruptions, subdues itching with 10 to 25 times the anti-inflammatory action of hydrocortisone; and combats secondary infection with both bacteriostatic and bactericidal action.

Simultaneously with the application of Florinef-S, anti-fungal therapy with Mycostatin is recommended for the control of monilial overgrowth, one of the principal causes of "chronic ears." Florinef-S is "non-messy" due to its aqueous, emollient base. Supplied in 15 cc. plastic squeeze bottles.

Topical antibiotic therapy for mycotic infections of the external ear and ear canal ("chronic ears"), skin, hair roots, feathers, nails, claws, etc. Recommended for use in association with Florinef-S for anti-fungal, anti-inflammatory, anti-bacterial therapy.

Many persistent and recurring infections of the external ear and ear canal ("chronic ears") are often attributed to bacteria, or other agents, when in reality the etiologic organism is mycotic. Mycostatin is the only antibiotic specific against *Candida albicans* (monilia) — one of the principal causes of "chronic ears." Previously hard-to-treat dermatomycoses usually respond promptly and monial lesions usually improve 48 to 72 hours after therapy has been initiated.

Anti-fungal therapy with Mycostatin is recommended simultaneously with anti-inflammatory, anti-bacterial therapy with Florinef-S to control monilial overgrowth effectively. The superior ointment base (Plastibase®) rapidly releases the anti-fungal antibiotic. Mycostatin is supplied in 15 and 30 gm. tubes.

©OLIN MATHIESON CHEMICAL CORPORATION, 1959
FLORINEF, SPECTROCIN, MYCOSTATIN and PLASTIBASE are registered Squibb trademarks.

SQUIBB

with well-earned prominence in the veterinary armamentarium

A highly successful treatment for nymphomania (frequent or constant heat in cows, or failure to come into estrus due to cystic ovaries).

Follutein, a sterile extract of the anterior-pituitary-like sex hormone (chorionic gonadotrophin) found in human pregnancy urine, has proved remarkably effective in establishing a normal estrus rhythm in cows having abnormal cycles due to the presence of cystic ovaries. When ovarian cysts fail to rupture in the normal manner, the hormone contained in their fluid disrupts the normal reproductive cycle. If ruptured mechanically, cysts tend to recur.

Cows become quiet 24 to 48 hours after one 10,000 unit injection of Follutein, usually followed by marked reduction in size of ovaries and establishment of normal estrus cycle in non-breeders. Follutein is supplied in packages of 10,000 international units with diluent.

Safe, highly effective oral therapy for enteric disturbances in domestic animals, caused by streptomycin-sensitive organisms. Particularly recommended for scours and related disorders of calves; also highly effective in small animals to combat enteritis conditions.

Strekacin contains 4 proven therapeutic agents for the treatment of enteric conditions of cows, calves, swine and other domestic animals.

Streptomycin plus *pectin* act synergistically and far surpass the ability of streptomycin alone to eliminate pathogenic intestinal organisms. *Bismuth* forms a protective coating which soothes irritated intestinal mucusa and exerts a sedative effect. *Kaolin*, a highly effective absorbent, removes toxins and toxic products. Strekacin is supplied in 1-pint bottles and is easily administered in drinking water or by individual dose syringe.

SQUIBB
OLIN MATHIESON CHEMICAL CORPORATION

—A NAME YOU CAN TRUST

Florinef-S, Mycostatin, Follutein, and Strekacin are available from your veterinary supply house, or nearest Squibb branch. For additional information write: SQUIBB, *Veterinary Department*, 745 Fifth Avenue, New York 22, New York.

HOG CHOLERA VACCINE

when used with proper dose
of anti-hog cholera serum,
induces immediate,
long-lasting immunity

Affiliated
BRAND

White Hall, Illinois

The Gregory Laboratory, Inc.
Grain Belt Supply Co.
Corn Belt Laboratories, Inc.
The National Laboratories Corp.

Produced for and sold to graduate veterinarians only

News Comment

Propose A.V.M.A. Move

A proposal to move A.V.M.A. headquarters to Kansas City is in the talking stage. Aggressive Kansas City veterinarians, civic leaders, and Chamber of Commerce members, after scoring a knockout punch in landing the Agricultural Hall of Fame for the Heart of America, have leveled their sights on national A.V.M.A. headquarters. Talking points: an airport five minutes from various proposed headquarter sites; proximity of any new site from all points in the nation; lower cost of maintaining headquarters; a permanent national headquarters building the profession can point to with pride at less than present Chicago rentals.

F.D.A. Head Is Dead

The sudden death of Dr. John H. Collins, March 27, deprived the profession of another outstanding leader. As Director of the Veterinary Division, Food and Drug Administration, Department of Health, Education and Welfare, Doctor Collins has contributed steadying professional judgment in many vital decisions of this important government agency. His service in this arduous, pressure ridden, Washington administrative post has been a credit to his profession and a rare example of loyalty to his nation. A successor has not been officially named.

Veterinarian to Head Arts and Sciences at Michigan

Dr. Lloyd C. Ferguson, Head of the Department of Microbiology and Public Health, Michigan State University, was appointed Dean of Sciences and Arts of Michigan State University, effective April 1. This is one of the most important assignments on the college campus and only top scholars are considered. Doctor Ferguson's selection is a fine tribute to his ability and an important honor for the veterinary profession. The vacancy filled by Doctor Ferguson resulted from promotion of the former dean to a newly created vice president position.

Humane Slaughter of Hogs

In compliance with provisions of the humane slaughter law of 1958, the USDA has designated four acceptable methods for humane slaughter of hogs. The four methods involve (1) carbon dioxide, (2) captive bolt stunners, (3) gunshot, and (4) electric stunning.

The approved methods require that carbon dioxide gas or electric current be administered to produce surgical anesthesia quickly and efficiently. Captive bolt stunners and firearms must produce unconsciousness with minimum excitement and discomfort. Packers who sell meat products to federal agencies after July 1, 1960 must comply with the above regulations.

Pension Plans Gain

The House has overwhelmingly approved the Keogh-Simpson bill to give veterinarians, physicians and other self-employed persons a tax break on money they pay into retirement plans. The measure passed despite the administration's objections that it would cost $365 million a year in tax revenues and despite charges by Congressional foes that it discriminates against those who are not self-employed. The bill is expected to make a strong stand in the Senate.

Fattening Beef Cattle

Enzymes for fattening beef cattle have emerged as the newest feed additive discovery. Iowa researchers said Agrozyme (Merck), a bacterial enzyme dry premix expected to soon become commercially available to cattle feeders through feed manufacturers, produced the following effects when added to standard fattening rations containing corn at 14% moisture content or less and stilbestrol in the supplement. It brought a 12% increase in gains, increased feed consumption 4% and reduced feed requirements 7% for each pound of gain.

Protein in Milk

Protein content of milk can now be determined with a simple, inexpensive and fast test, according to University of Wisconsin researchers. Indications are that routine use in dairy plants may be possible in the near future.

The protein test might be used to determine the price paid for fluid milk. It might also be used for herd improvement since the test enables dairymen to check individual cows for protein yield. Cows not yielding enough protein could thus be easily culled from the herd.

Defects Due to Stress

Maternal stress during pregnancy can account for cleft palate and harelip in the dog, according to recent research. Removal of stress factors, such as insufficient oxygen, exposure to x-ray, virus infection, vitamin deficiency, etc., can prevent the congenital anomaly.

Sometimes smallness is mighty big!

It's amazing how some of the 5'7" players on the basketball court can hold their own against the 6'8" giants. Some of them do it through sheer determination to get ahead. They must display exceptional performances to succeed against the seemingly overwhelming odds confronting them.

Your Independent Veterinary Supplier finds himself in the same precarious position, with the seemingly overwhelming odds presented in the form of competition by large corporations.

As an individual, he has infinite faith in American Free Enterprise and faith in his customers who appreciate the individual attention they receive through the services of an Independent Veterinary Supplier. The excellent service he offers, and your support, is the Independent Wholesaler's "sling and stone" against competitive giants.

DIAMOND LABORATORIES

DES MOINES • IOWA

SUPPORT YOUR LOCAL INDEPENDENT ETHICAL WHOLESALER

ANNOUNCING

A veterinary exclusive in therapeutic feed supplements

economical

TERRAMIX® A-B-D-25

oxytetracycline with vitamins

Vitamin-enriched A, B_{12}, D_3, and riboflavin

Broad-spectrum antibiotic—oxytetracycline

Designed to support your initial therapy in herds and flocks

ECONOMY—the most economical vitamin-enriched broad-spectrum antibiotic for therapeutic feed supplementation.

CONVENIENCE—Space-saving, dispensing concentration 5 pound canister—25 grams per pound

EFFECTIVENESS—In Swine, Cattle, Sheep, Mink, Poultry Terramix A-B-D-25 has a wide range of antimicrobial effectiveness against gram-positive and gram-negative bacteria, rickettsiae, spirochetes, and certain viruses. Plus the treatment benefits of the addition of vitamins needed in many animal diseases.

PACKAGING AND COMPOSITION—5 pound canister—125 Grams. Each pound of Terramix A-B-D-25 contains 25 grams of oxytetracycline activity, plus 2,000,000 units of Vitamin A, 200,000 units of Vitamin D_3, 2 grams of Riboflavin, 4 mg. of Vitamin B_{12}, with expeller soybean oil meal as the diluent, Q.S.

Sold to Veterinarians only

Pfizer Science for the world's well-being

Department of Veterinary Medicine
PFIZER LABORATORIES, Division, Chas. Pfizer & Co., Inc.
Brooklyn 6, N. Y.

QUICK, EFFECTIVE TREATMENT FOR TOPICAL INFECTIONS

KERASPRAY®

Keraspray provides 4 potent antibacterials, plus a local anesthetic. This broad antibacterial activity makes it especially useful as a topical dressing following closure of surgical incisions, dehorning and castration.

In the easy-to-use plastic insufflator, Keraspray offers effective therapy for infected wounds, ear and eye infections—specifically keratitis.

in large AND small animals

Each Gm. contains:

Neomycin sulfate	0.25%
Phenylmercuric nitrate	0.005%
Sulfanilamide	86.25%
Sulfisoxazole	10.0%
Tetracaine hydrochloride	0.5%

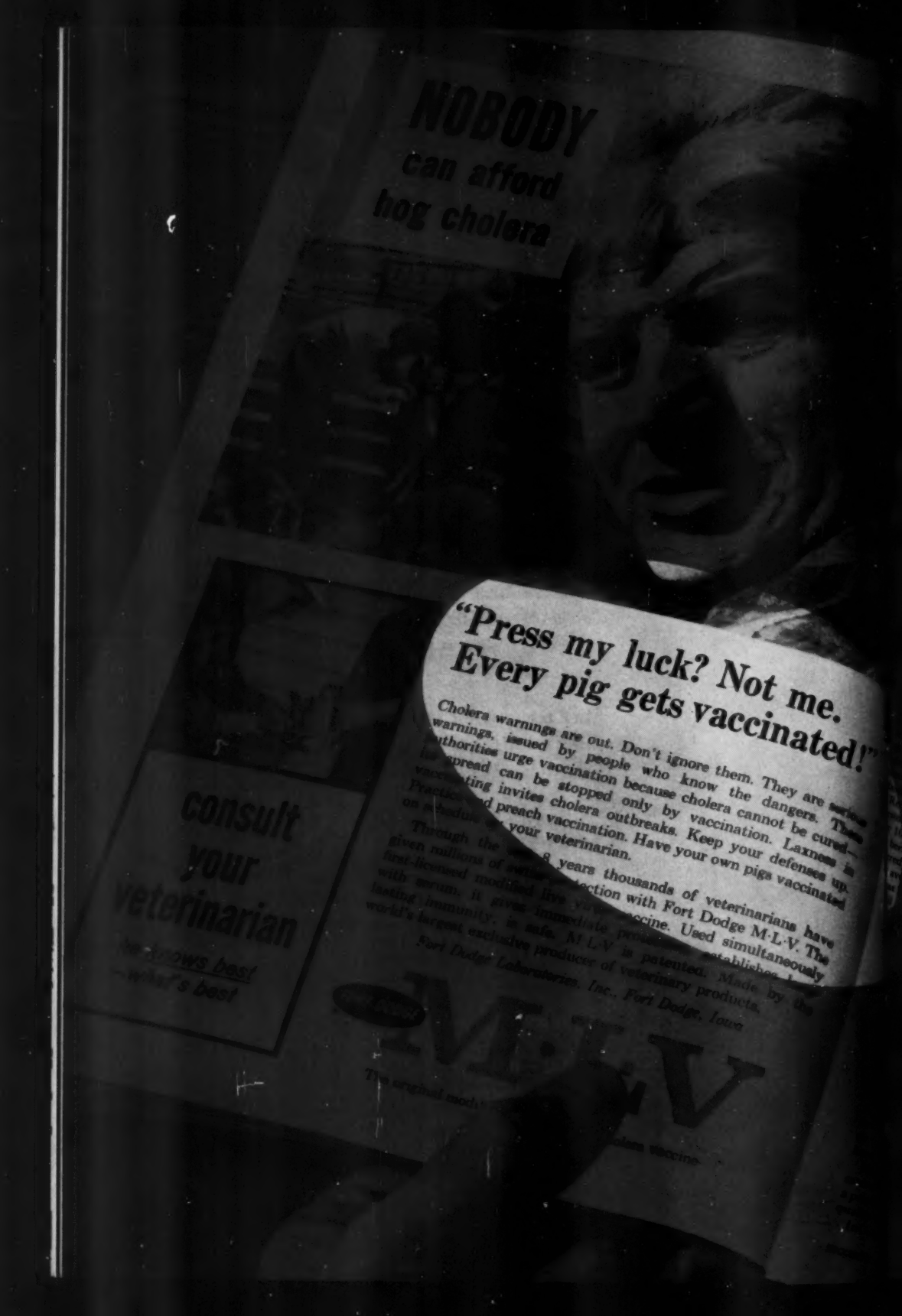
Supply: 5 Gm., 14 Gm. and 30 Gm. plastic insufflators.

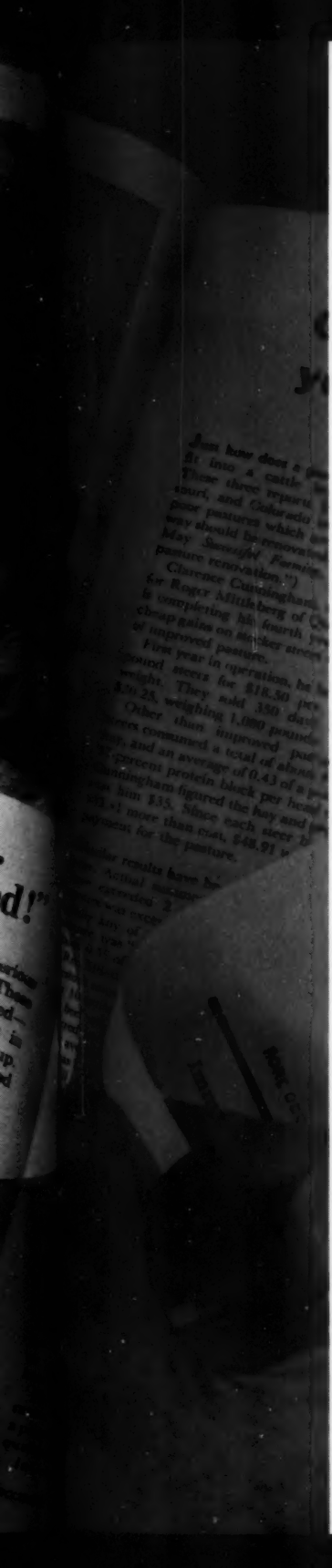
ONE PUFF IS USUALLY ENOUGH

THE S. E. MASSENGILL COMPANY

Veterinary Division

BRISTOL, TENNESSEE


NOBODY
can afford
hog cholera
consult
your
veterinarian
"Press my luck? Not me.
Every pig gets vaccinated!"
Cholera warnings are out. Don't ignore them. They are
warnings, issued by people who know the dangers. The
thorities urge vaccination because cholera cannot be cured—
spread can be stopped only by vaccination. Laxness in
ting invites cholera outbreaks. Keep your defenses up.
d preach vaccination. Have your own pigs vaccinated
your veterinarian.
years thousands of veterinarians have
ction with Fort Dodge M·L·V. The
ccine. Used simultaneously
Fort Dodge Laboratories, Inc., Fort Dodge, Iowa
M·L·V



Part of the fight against cholera is a fight against complacency

A situation of wide concern has prompted Fort Dodge Laboratories to address a series of educational messages to farmers. You are familiar with the alarm expressed by the USDA, farm publications and livestock organizations at the downward trend in hog cholera vaccinations. There is real fear that the swine industry may be ripe for a serious cholera outbreak.

To encourage broader programs of vaccination, reminder messages are being published in leading national, regional and local farm magazines for a total of 15,723,268 impressions. They point out the dangers that complacency can create. They stress the advantages of veterinary services. They invite confidence in the 8-year record of M·L·V. . . the original, first-licensed modified live virus vaccine.

Fort Dodge Laboratories, Inc., Fort Dodge, Iowa

FORT DODGE® M·L·V

The original modified live virus hog cholera vaccine

These publications will carry Fort Dodge messages in 1959:

Successful Farming • Farm Quarterly • National Hog Farmer
National Livestock Producer • Daily Drovers Journal
Daily Drovers Telegram • Daily Journal Stockman
Daily Livestock Reporter • Progressive Farmer
Ohio Farmer • Missouri Ruralist • Prairie Farmer • The Farmer
Wallaces Farmer • Nebraska Farmer

New Product Information Report #202

TO: **ALL VETERINARIANS**

SUBJECT: **Infectious Bovine**

Rhino-tracheitis Vaccine

(Bovine Origin)

INDICATIONS: **For the prevention of Infectious Bovine Rhinotracheitis in all cattle by inoculation, just prior to or upon their entering the feedlot.**

ADMINISTRATION: **Administer intramuscularly.**

DOSAGE: **Single 2 cc. dose per animal.**

PACKAGING: **Infectious Bovine Rhinotracheitis Vaccine packaged in 10, 20 and 50 dose vials.**

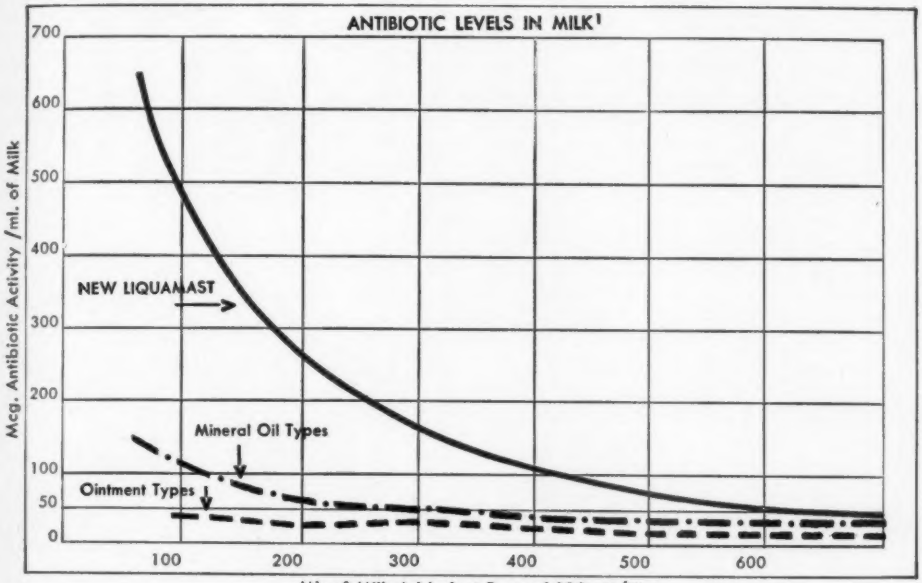
Field tests on Research Laboratories' new Infectious Bovine Rhinotracheitis Vaccine have shown that it confers rapid immunity to I.B.R; the virus is not spread from the vaccinees to other animals, and the vaccine does not produce symptoms. One day's financial loss from I.B.R. costs two to ten times the price of vaccination, which is the only prevention. Research Laboratories' Infectious Bovine Rhinotracheitis Vaccine undergoes tests for sterility, potency, safety, and moisture with the highest quality control standards.

Write for further information and free client literature.

Research Laboratories, Inc. St. Joseph, Missouri

Research Laboratories sells its products only to graduate veterinarians.

More effective MASTITIS therapy with MAXIMUM antibiotic milk levels



[1] Microbiological Assay, Agricultural Research and Development Dept., Chas. Pfizer & Co., Inc.

NEW

LIQUAMAST*

oxytetracycline HCl

Broad-Spectrum antibiotic effectiveness—oxytetracycline is highly effective against all of the most common organisms responsible for bovine mastitis.

Rapid diffusion—rapidly dispersing vehicle provides deep antibiotic penetration into the udder tissue to reach those organisms responsible for maintenance of chronic infection.

Completely soluble in milk—permits direct contact with causative organisms.

Plus

Stability—Nonfreezing—Nonirritating

Supply—LIQUAMAST is available in ½ oz. tubes with a total of 426 mg. of oxytetracycline (as the hydrochloride) in each tube, packaged in 12-tube cartons with a tube squeezer.

Sold to Veterinarians Only

*Trademark

Pfizer *Science for the world's well-being*

Department of Veterinary Medicine
PFIZER LABORATORIES
Division, Chas. Pfizer & Co., Inc.

FIRST...

Swivax*

Increased demand for pony and light horse service has prompted many veterinarians to review practice pointers for management of common problems. Here a VM reporter has abstracted a more comprehensive report presented by Doctor Harvey.

Light Horse and Pony Practice

S. K. HARVEY, D.V.M.

Monson, Massachusetts

A TREMENDOUS INCREASE in light horse and pony numbers throughout the country is creating a growing demand for veterinary service. The following tips are intended to help the general practitioner deal more effectively with some of the unique problems with which the veterinarian is confronted in this type of practice.

Dental Work in Ponies. Oral examination of the pony's mouth must generally be done from a kneeling position. The less restraint used the better are results. It is not advisable to pull out the tongue. Placing the thumb on the upper hard palate will hold the mouth open nicely.

In tight lipped ponies it is well to use Tampax to protect the lips while floating teeth. Similar protection can be afforded with the use of a roll of cotton in a plastic case. The device can be reused. A standard equine speculum is not used in pony practice. Caps are best removed from teeth with a 9 or 10 in. canine bone rongeur. The wolf tooth is a common problem and can be worked out quite easily with a canine elevator.

A tranquilizer may be used for high-strung animals or when working far back in the mouth. Administration is always by the intravenous route and care must be taken to avoid overdosage; 5 to 7 cc. for the 800 to 1,000 lb. animal is routine. For ponies, a maximum dose of 5 cc. is used.

The Ears. Head shaking is a common phenomenon. Upon examination teeth appear to be in good condition. Examination of the ear may often reveal a crusty material which is commonly associated with a fungus infection. Naprylate (Strasenburgh) or Caprolate (Strasenburgh) offer excellent therapy. If small black balls similar to flea manure are observed in the ear, Fosteen (Westwood) one part to four parts of water is excellent for cleaning. An excellent fungicidal preparation consists of Canex (Pit-

Presented at the 36th Annual Postgraduate Conference for Veterinarians, Michigan State University, January 21-22, 1959.

man-Moore) and Cerbinol (Pitman-Moore) mixed together in equal parts.

The Eyes. Eyelid lacerations are common in ponies. These can be sutured with synthetic suture material. One of the pitfalls is that eye movement delays healing on the inner surface long after external healing appears complete. To avoid this problem, it is well to take a tuck in the same manner as used in the canine entropion operation to hold the lid away from the eye during healing. The tension suture is removed at the same time as the primary suture.

When eyes are running it is always in order to check the lacrimal duct. Blunt mastitis needles may be inserted in the duct opening just inside the nostril to allow flushing with the syringe. If the lacrimal duct is open, fluorescein solutions placed in the eye will be observed near the duct opening in the nostril.

Flocculation in the anterior chamber of the eye is treated with Deltacortef (Upjohn) and vitamin A in large doses. The corticoid is administered twice a day for four days, once a day for five days, and the patient tapered off on ACTH or aspirin. Neopolycin (Pitman-Moore) ophthalmic ointment or simple sulfonamide ointments are used in the eye.

Some Shetland ponies have a head like a horse. When these animals get older their teeth give them trouble and the glottis becomes inflammed. Usually the animal must be destroyed.

Common Conditions

Fistula of the Withers. In ponies, fistula of the withers is treated with Varizyme (Cyanamid) 3 cc. intravenously the first day and 3 cc. the next day. After a two-day rest, the course of therapy is repeated. Antibiotics are also used. If the fistula is open, it can be flushed with Furacin (Eaton) and Tryptar (Armour). Eight of the last nine cases treated by the writer have responded to this therapy. After 16 months there have been no recurrences.

Urogenital Problems. Tumerous processes are frequently encountered around the preputial orifice of old valuable ponies. Standing surgery and tranquilizers provide the best management. Antihistamines plus diuretics in the form of 50% dextrose are commonly used to reduce swelling. A full 500 cc. is administered for diuretic effect, but rate of infusion is very slow after the first 100 cc. has been given to avoid the possibility of shock. Small stone-like beans are also common findings in the prepuce. These create marked tenderness and urinary retention. In such cases (Metropine) is used at the rate of 3 cc. subcutaneously or intramuscularly to relax the smooth muscle of the bladder. Urination commonly occurs in a few minutes. A small dose of Lentin (1 to 2 cc.) may be used for the same drug activity.

Castration. A secret to successful castration of ponies or light horses is the use of a big incision. By making a 4 to 6 in. incision on each side, a return call is seldom necessary. If an increased volume of fluid is observed around the testicle, a tendency toward rupture is suggested. These animals are packed for three days as a precautionary measure.

Parasite Control. Parvex is a good anthelmintic agent, although somewhat less effective against pinworms than ascarids. At our clinic, we increase the dose from 1 oz. per 100 lb. body weight to 1 oz. per 50 lb. body weight for pinworms. An enema can be prepared from piperazine powder using 2 oz. in two quarts of water for administration as far forward as possible. It is hoped that the pinworms will migrate to the treated region. This approach appears to hold considerable promise.

The area around the rectum is always scrubbed for pinworm control. One teaspoonful of Havosept (Haver-Lockhart) in a quart of warm water may be used without irritation.

Respiratory Problems. Ponies are extremely susceptible to respiratory troubles. Phenergan with codeine (Wyeth) is used for cough control. It is generally necessary to give one pint of mineral oil for two days and watch carefully to avoid constipation. Corn is always withheld completely when respiratory problems are encountered.

Kicking is a common activity of ponies. You will frequently encounter patients with a temperature of 102-103 F. resembling

pneumonia, but symptoms do not seem quite typical. On simultaneous palpation of the ribs on both sides, variations can commonly be detected in the rib cage typical of pleuritis following a kick. An old fashioned flaxseed poultice is a useful agent in these cases.

Intestinal Putrefaction. It is quite common to examine a pony which exhibits a marked reddening with blue streaks far back in the throat. The fecal material is foul smelling. If these animals are immediately given antihistamines, antibiotics and flushed, they respond quite well. Allowed to continue without therapy, they can cause serious trouble.

Breeding Problems. A pony mare can be brought into heat with 2 cc. of E.C.P. (Upjohn), in five to seven days. For light horses, the dose is 3½ to 5½ cc. Similar results can be achieved with 20 cc. of gonadotrophin in the pony or 30 cc. in the light horse. The textbook 21 day heat cycle is not sufficiently accurate for clinical purposes. It is best to calculate 16 days from the end of heat.

Colic. Intravenous administration of Novin (Haver-Lockhart) gives the equine practitioner more nights sleep than any other drug. The animal is not dopey like chloral hydrate treated animals and can be walked immediately. This is not a cure for all types of colic. A rectal examination and diagnosis is always in order. For acute gastritis bicarbonate is administered. The whole gastrointestinal tract can be moistened in four hours with Cecolysin. Mineral oil is much slower in its action.

Hematology. Calphosan with B_{12} (Carlton) is used regularly for treatment of anemia. Amino-X (Jen-Sal) is an excellent dispensing item since horses like the taste of it.

Lameness. Straight leg trouble is common in ponies and light horses. Corrective shoeing can provide an important aid to management of many of these conditions. The highest incidence occurs in the foot or lower leg. An old fashioned liquid blister is available from Goshen Laboratories under the name, Pink Blister. With Hoof Dresser, another Goshen product, a new hoof can be grown in five to seven months. The hoof is trimmed and soaked for 12 hours and left uncovered for 12 hours. This therapy is also good for contracted feet, chronic laminitis, and helps prevent thrush.

When green grass laminitis is encountered as evidenced by even ridges on the hoof no purgation is used. Two ounces of U.S.P. Alum in a quart of warm water is given for two days. Feet are kept in cold water and ice. Antihistamines provide the best therapy in acute laminitis. If the fever is high antibiotics are administered. Steroids are used in some cases. Overeating laminitis calls for purgation. Standard Reek's Capsules, mineral oil or mild Glauber's Salts are used. The feet are kept in boots with ice.

There is no permanent cure for polyarthritis. The best result is achieved with 60 grains of aspirin.

Properdin

Recently, properdin, a protein believed to function in natural immunity, has been isolated from human serum and the sera of other species of animals.

The properdin "system" is composed of properdin, the four components of complement, and magnesium. All of the components are necessary for the various activities of the system.

Properdin has been found to be distinct from antibody in any acceptable sense.

It has been demonstrated that the properdin system has the ability, *in vitro*, to lyse certain cells, destroy bacteria, inactivate viruses and appears to be involved in the resistance or susceptibility of experimental animals to infection, irradiation and shock.

The *in vivo* functions of the system have yet to be proved. There have been numerous theories and presumptions on the role of the properdin system as an important part of the defense mechanism of mammals, but since the subject is so recent, it will require a great deal more study before the value of the system will be thoroughly understood and appreciated.—*Auburn Veterinarian*, Fall 1958.

Infectious Atrophic Rhinitis

WILLIAM P. SWITZER, D.V.M., Ph.D.

Veterinary Medical Research Institute
Iowa State College
Ames, Iowa

Presented at the 75th annual meeting of the Indiana Veterinary Medical Association, Indianapolis, Indiana, January 15, 1959.

INFECTIOUS ATROPHIC RHINITIS is a disease complex of swine characterized by turbinate atrophy. It must be emphasized that this condition is a complex and not a single disease entity. When this lesion was first described in Germany in approximately 1830 it was thought to be an infectious condition since it was observed to spread slowly through swine herds. However, attempts to transmit this condition were unsuccessful and many different theories of etiology were advanced. It was not until 1947 and 1948 that workers proved the importance of inoculating young pigs to demonstrate transmissibility of turbinate atrophy. Following this work there developed an understandable tendency to think of turbinate atrophy as a specific disease since the condition presents a rather distinctive lesion.

Turbinate Atrophy

The theory that several different agents are capable of causing turbinate atrophy has evolved during the last few years. There is now definite evidence that certain isolations of *Pasteurella multocida*, *Brucella bronchiseptica* (morphologically resembling *Alcaligenes fecalis*) and a large filter passing agent are all capable of causing forms of turbinate atrophy with similar gross lesions. Turbinate atrophy has been produced by repeated intranasal instillation of chemical irritants such as acetic acid. It appears that any agent capable of producing a severe, persistent rhinitis at an early age will cause atrophy of the turbinates in swine.

It is quite likely that cases of turbinate atrophy occurred in the swine population for many years prior to initial recognition. It was not until diagnosticians in practice and in the laboratory began looking for lesions of this condition that they found

them. Recognition that this lesion occurred in certain herds in this country alarmed the swine industry enough to prompt official and unofficial recommendation of quarantine and slaughter measures. As time passed and additional information was discovered, it became apparent that some degree of turbinate atrophy could be detected in a sizable percentage of the herds in the corn belt, and that the initial alarm about the economic effects of this lesion on rate of gain was not completely justified.

Reports

As an example I would like to cite a three-year study of 16 herds located in a several county area in Iowa. We detected turbinate atrophy in specimens from 15 of the 16 herds at some time during the three-year observation period. In some cases we could demonstrate severe atrophy in the first group of pigs examined, whereas in other herds we had to examine pigs from many different farrowings before we observed turbinate atrophy. Owners felt that the rate of gain in most of these herds was satisfactory and in a few cases exceptional.

Economic Factors

General observations such as these have been made by many different segments of the swine industry. Today we find that the pendulum of concern has swung to almost the opposite extreme of the initial alarm reaction. Many swine growers are currently unconcerned about the effects of turbinate atrophy on swine production. It is my belief that the true economic effect of this condition lies somewhere between these two extreme views. It has been suggested by recent work that there may be a weight loss of about 6% due to turbinate atrophy. This amounts to a staggering total loss to the industry, yet is small enough at the individual herd level to cause no undue alarm to owners. Many owners of purebred herds are placed in a difficult position due to the presence of turbinate atrophy in their stock. Should they sell breeding stock knowing that this insidious disease complex is present, or should they attempt to eradicate the lesion from their herds?

Armed with the experience of working with the two bacterial agents and the filter passing agent previously mentioned, we set out to determine the cause of turbinate atrophy in problem herds. We promptly began to encounter several cases that we could not explain. This may have been due to alteration in virulence of the bacteria isolated by even one or two passages in artificial media, or it may reflect an incomplete knowledge of what causes some of these cases of turbinate atrophy. Failure to explain the cause prompted us to develop tissue culture systems in an attempt to isolate additional agents. Work is progressing satisfactorily although it has presented certain problems of its own. Nonetheless, it indicates a belief on our part that there are additional agents present in the respiratory tract of swine we are currently unaware of. We must explain and clarify the role of such agents before we understand the cause of some cases of turbinate atrophy.

Clinical Observations

We have observed that chronic pneumonia believed to be virus pneumonia of pigs is usually present in herds affected with clinical problems attributed to turbinate atrophy. The possibility that these two disease conditions might have a common cause has been investigated. In no case were we able to produce turbinate atrophy with pneumonia material unless the large filter passing factor was present as a secondary invader in the pneumonia. By serial passage we were able to segregate a turbinate atrophy factor and a pneumonia factor. This indicates that while the damaged turbinates may be predisposing factors to pneumonia, actual causative agents are different.

Another laboratory observation regarding turbinate atrophy helps explain some of the variations in lesions observed in the field. Multiple exposures seem to produce more severe lesions than single exposure. This is foreign to our usual concept of disease. We generally think that an animal exposed to an infectious agent either contracts or does not contract the disease. In many cases of turbinate atrophy, intensity of exposure is correlated with severity of the lesion produced.

There is also an age change in the nasal mucosa of pigs that appears to result in an

increased resistance to the effects of irritants. For example the intranasal instillation of a 2% acetic acid will produce violent sneezing in pigs up to about two weeks of age, but beyond that age a 4% solution is required to produce comparable results.

In general, then, massive exposure at an early age favors production of severe turbinate atrophy. As with all general rules, there are exceptions.

One other important factor concerning transmission of turbinate atrophy is that not all animals in an infected herd will have turbinate atrophy and not all affected animals will transmit the condition to their offspring.

These observations suggest a certain weakness in the transmission cycle of turbinate atrophy. Presumably it can be utilized to help reduce or eliminate this lesion from litters of pigs. A plan similar to that proposed for the control of virus pneumonia of pigs incorporates measures to capitalize on weak points.

1. Isolate bred sows or gilts in individual houses and lots.
2. Farrow females in these isolated quarters.
3. Raise litters of pigs in isolated quarters until a month after weaning.
4. Select replacements only from litters with no evidence of sneezing or coughing.
5. Maintain new stock in quarantine until the old herd has been completely depopulated.

In addition it has been observed that some herds have a reduced incidence of turbinate atrophy if continual culling is practiced of any brood stock evidencing sneezing or coughing. Another measure that may reduce the incidence of turbinate atrophy is reduction of early exposure to this disease complex by farrowing sows on pasture.

Of course there is one method that is more positive than any of these and that is to develop a breeding herd from pigs taken by hysterotomy and reared in isolation. This procedure is being field tested by workers now and if a sufficiently practical system can be developed it will be the most positive method for elimination of turbinate atrophy.

Summary

In summary we should note the following:

1. Turbinate atrophy is a lesion that may be produced by different agents.
2. Turbinate atrophy alone does not have too great an effect on rate of gain but may predispose to other respiratory infections.
3. The single house isolation system of rearing litters of pig is presently the most practical control measure.

Nutrition Needs During Lactation

Approximately a month after pups start nursing, a bitch requires about three times the normal food amount. Since more nutrients or calories are necessary at this time, they must be obtained from body tissues and stored nutrients. Energy, or calories, seem to be the major need at this time, researchers believe.

Growth rate data indicate that pups gain little the first week, but put on weight rapidly during the second week and thereafter. Weight gains of pups from small litters (three or less) are uniformly higher than pups from large litters (four or more). Rate of gain at this stage does not affect adult size of the dogs.

Human Leptospirosis

Dr. Douglas Hawkins, Institute of Agricultural Medicine, State University of Iowa, reports investigation of a case of human leptospirosis during November. The patient indicated that several of his animals had been bled for leptospirosis tests. On consulting the veterinarian, it was learned that all animals tested were positive for leptospirosis. These animals had experienced several abortions, at which time the patient had handled most of the fetuses. The patient was treated with tetracycline and was back at work in approximately two weeks, although he was quite weak for some six weeks. — *Veterinary Public Health Newsletter, December 15, 1958.*

Fig. 1. Lower Sonoran Life Zone of the United States (black area.) The endemic area of coccidioidomycosis is within this life zone.

Recent studies suggest that most mammals living in certain areas of southwestern United States eventually become infected with coccidioidomycosis. Of the animal species, clinically important infection is recognized only in dogs. Infected animals and persons are not considered directly infectious to each other but further study is needed to improve understanding of the infection.

Coccidioidomycosis in Animals

KEITH T. MADDY, D.V.M., M.P.H.

Communicable Disease Center, Public Health Service and Arizona State Department of Health
Atlanta, Georgia and Phoenix, Arizona

A FEW YEARS AGO coccidioidomycosis was not considered to be a common infection of animals. Recent studies, however, indicate that possibly most mammals that live in certain areas of southwestern United States eventually become infected.

Geographic Distribution

Infection seems to be confined to the arid and semi-arid areas of southwestern United States where the mean annual temperature is high compared to the rest of the country. Apparently most infections are acquired within the Lower Sonoran Life Zone (fig. 1), which is one of the life zones designated by Merriam.[1] Within this life zone, mean July temperatures range from about 80 F. to 90 F. Mean January temperatures range from about 39 F. to about 53 F. Rainfall ranges from less than 3 to 20 inches per year. Areas appear to be more infective where the mean July temperature is close to 90 F., the mean January temperature is close to 51 F. and the rainfall is about 5 to 20 inches per year.[2,3,4]

Infection of man also occurs in certain arid and semi-arid areas of Mexico,[5] Paraguay,[6] Argentina,[7] and Venezuela[8] and possibly also in Peru,[9] Ecuador,[10] and Bolivia.[11] Infection of other mammals no doubt also occurs in these countries.

Transmission

The fungus *Coccidioides immitis* grows in the soil in the endemic areas. Soil sampling studies in cooperation with the Arizona State Department of Health so far have revealed that this fungus can only be isolated from rodent burrows or nearby in certain areas of the desert (figs. 2, 3, 4, and 5).

Presented at the 13th Annual Meeting of the International Northwest Conference on Diseases in Nature Communicable to Man, August 27-29, 1958 — Hamilton, Montana.

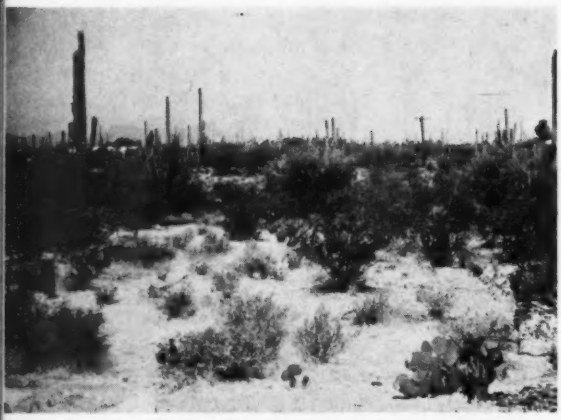


Fig. 2. Typical desert vegetation of one of the more endemic areas.

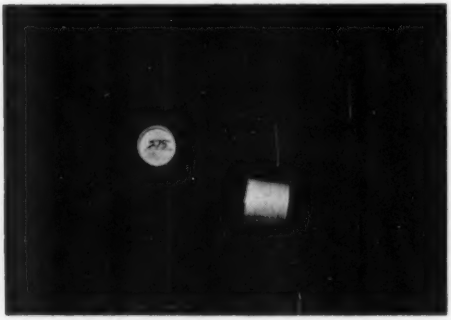


Fig. 3. Rodent burrows from which C. *immitis* was isolated.

Fig. 4. Collection of soil samples for C. *immitis* isolation attempts.

The arthrospores of *C. immitis* (fig. 6) are usually inhaled by the mammal and the primary infection of the lung occurs with the development and multiplication of sporangia (fig. 7). Infection can also occur by the introduction of the arthrospores or sporangia into a wound, but this is not common.

Susceptible Hosts

Besides man, infections have been reported in several other mammals.

Cattle. The earliest reports of infected cattle were made by Giltner,[13] Davis and Stiles,[13] Davis *et al.*,[14] Stiles *et al.*,[15] Beck *et al.*,[16] Beck,[17] and Stiles and Davis.[18] These early reports were case histories of a total of 116 animals. Davis and Anderson[19] reported on 69 additional cases. Some of these were laboratory confirmations of clinical diagnoses made by Prchal. In 1948 Prchal[20] reported on 511 cases and in 1954 the author[21] reported on 3,173 cases with postmorten lesions. The last two reports and another by Prchal[22] pointed out the likelihood of thousands of cases occurring in the southwest annually.

For the past few years it has been observed that between five and 20% of the cattle fed in central Arizona feedlots have lesions of coccidioidomycosis on postmortem inspection in slaughter-houses under state and federal inspection in Arizona.

Between 1954 and 1958 the author skin tested (fig. 8) several thousand cattle in Arizona with undiluted coccidioidin (lots 15087 and 59-62) furnished by Dr. C. E. Smith of the School of Public Health of the University of California. In most endemic areas a high percentage of the cattle become coccidioidin positive within two or three years. Palmer[23] reports finding skin test positive cattle in southern Utah. There are probably several million infected cattle in southwestern United States at any given time.

Dogs. Farness,[24,25] Smith,[26] Spreigel and Milliff,[27] Jasper and Lewis,[28] Cordy and Hoop,[29] Watson,[30] Eville,[31] Hage and Moulton,[32] Levan and Burger,[33] Short *et al.*,[34] and Cordy[35] reported a total of 15 cases in dogs by 1955. All were disseminated except for one of the cases reported by Levan and Burger. It is doubtful if a case reported

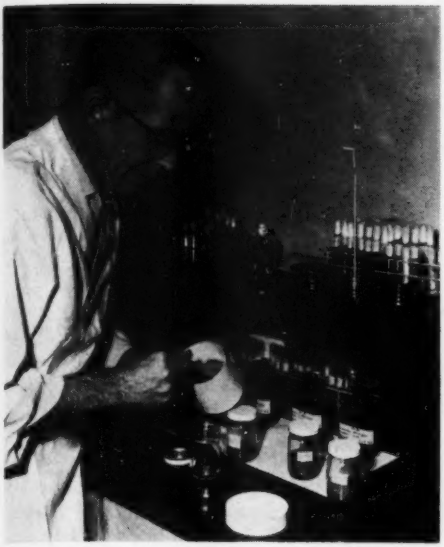


Fig. 5. Laboratory examination of soil in an attempt to isolate *C. immitis*.

by Plummer[36] was an infection with *C. immitis*. In 1954 Reed,[37] reported on 25 cases and in 1956 he reported[38] on an additional 27 cases that were obtained chiefly from the Tucson, Arizona area. Ajello *et al.*[39] reported on ecological and epizootiological studies relating to five of Reed's cases. The author observed over 200 cases of disseminated canine coccidioidomycosis in the Phoenix area between 1954 and 1958. Straub and Schwartz[40] reported on a postmortem study of 34 dogs selected at random at the dog pound in Tucson, Arizona. Lesions were found in the lungs or hilar lymph nodes of eight dogs. All were apparently healthy except one which appeared to have distemper.

A Common Infection

The writer used undiluted coccidioidin (lots 15087 and 59-62) furnished by Dr. C. E. Smith to skin test dogs in the Phoenix, Arizona area. Of 121 ill dogs (average age of 1¾ years) in which dissemination was eventually proved, 99 (81.8%) were positive when skin tested. Of 177 sick dogs (average age of 1½ years) in which clinical coccidioidomycosis of some form was suspected, 98 (55.4%) were positive when skin tested. Of 166 apparently normal dogs (average age of two years) 61 (52.6%) were positive when skin tested (fig. 9).

These and other observations by Reed[41,42,43] and the author[44,45] indicate that coccidioidomycosis is a common infection of dogs in the southwest.

Horses. Miller[46] found *C. immitis* in lesions from lungs of three horses in Arizona on which a postmortem examination had been made by Dungan. Dungan[47] reports that two of the cases had only a few granulomas in the lungs. The other case had granulomas in the lungs, liver, spleen, and kidneys. Dungan as a veterinary meat inspector in a horse slaughtering plant, reports that he saw numerous other horses at postmortem with lesions in the lungs similar to those which were identified as *C. immitis* infections by the laboratory.

Twenty-two horses (average age of 3½ years) raised in the Phoenix, Arizona area were skin tested with undiluted coccidioidin (lots 15087 and 59-62) furnished by Smith. Thirteen (59.0%) were positive. Zontine[48] reported a case in which illness lasted four months. The following signs were noted: Intermittent abdominal spasms, severe progressive emaciation, slightly icteric conjunctival mucosa, petechial hemorrhages on the nasal mucosa, rapid and weak pulse, variable temperature sometimes elevated two degrees, moderate anemia, edema of the lower legs, and peculiar pointing attitude of the front feet. Death was due to rupture of the liver, and numerous granulomas were found throughout the lungs, liver, and spleen at postmortem examination. This infection is likely quite common in horses.

Burros. Wilding *et al.*[49] report finding pulmonary lesions of coccidioidomycosis in burros shipped into the United States from the desert areas of northern Mexico. The writer skin tested one burro raised near Mesa, Arizona with Smith's undiluted antigen (lot 59-62). Results were positive.

Sheep. Beck,[50] Prchal,[51] and the writer,[52] have found cases of this infection in sheep. The writer has skin tested 23 sheep, (average age 3½ years), in the Phoenix area with Smith's undiluted antigens (lots 15087 and 59-62). Twelve (52.2%) of the sheep were positive. In 1958 the author collected lesions from five sheep (about

four years of age) at postmortem at a Los Angeles slaughter house. The sheep appeared to have caseous lymphadenitis, and there were extensive gross lesions in lungs, liver, spleen, kidneys and in numerous skeletal and visceral lymph nodes. In the lesions of three of the sheep, sporangia of *C. immitis* were seen and the organism was cultured from all three. These sheep had been raised in central California.

Swine. Jones[52] found this infection in a pig from Santa Paula, California on which the postmortem examination was made by W. P. Humphry. Granulomas were observed in the lungs only. The author skin tested 65 swine (average age of eight months) in Florence, Arizona. Seven were positive with Smith's undiluted antigen (lot 59-62).

Llama. Jones[53] found this infection at postmortem examination on a one year old llama raised in California which exhibited emaciation before death and granulomas in the lungs, liver and kidneys at necropsy.

Monkey. McKenney *et al.*[54] reported finding this infection in a monkey in the San Diego Zoological Gardens.

Gorilla. A gorilla in the San Diego Zoological Gardens is reported[54] to have died of disseminated coccidioidomycosis.

Tapir. A two year old male South American tapir *(Tapirus terrestris)* died at the San Diego Zoo and postmortem examination revealed many granulomas in the lungs. There were also some in the pericardium, myocardium and in the prethoracic and aortic arch area. Laboratory examination revealed *C. immitis* sporangia in the lesions.[55]

Chinchilla. Jasper[56] reported a case diagnosed at postmortem examination in a chinchilla from central California.

Wild Rodents. Emmons and Ashburn[57] reported finding infected desert rodents: pocket mice, *(Perognathus baileyi, P. penicillatus* and *P. intermedius)*; kangaroo rat, *(Dipodomys merriami)*, and grasshopper mouse *(Onchomys torridus)* in Arizona. Jellison *et al.*[58] recovered the organism from three wild rodents of two different species (two *Perognathus formosus* and one *Citellus leucurus*) from Washington County, Utah. It is doubtful if the case reported in a Townsend mole by Rector and Rector[59] was one of coccidioidomycosis.

Fig. 6. Arthrospores of *Coccidioides immitis* x 970.

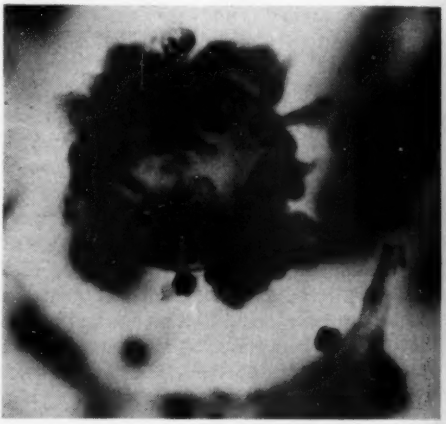


Fig. 7. Sporangium of *Coccidioides immitis* x 970.

Symptomatology

Signs and symptoms have been carefully looked for in infected cattle, but they have not been detected. Few symptoms have been seen in other species of animals except in the dog.

In primary infections, respiratory symptoms may be observed in the dog one to two weeks after infection. Some dogs do not exhibit clinically apparent symptoms of the primary phase of the infection, even though they may later show symptoms of dissemination. There may be an acute or chronic cough of various intensities. There

may be shortness of breath due to pressure on the trachea and bronchi by enlarged hilar lymph nodes. The body temperature may remain high with lowering possible with salicylates but not with antibiotics. The appetite may be poor, and there may be some consequent weight loss. The primary illness may subside after a few days or weeks and the dog may remain healthy for the remainder of its life.

If dissemination from the thoracic cavity is going to occur in the dog, it is most likely to become apparent at about four months after infection, but it can follow shortly after the primary illness or not until several years later. With dissemination there is sometimes gradual cachexia, and there may be intermittent diarrhea. There may be various circulatory disturbances. The temperature may follow an erratic elevated course. Bone involvement is often noted which often results in marked lameness and eventually painful invalidism. At this point dogs are usually humanely destroyed, but they can live on for several months if given considerable nursing (figs. 10-14).

Fig. 8. Positive skin test of a cow infected with coccidioidomycosis.

Fig. 9. Positive skin test of a dog with coccidioidomycosis.

Fig. 10. Dog at onset of dissemination. Note the weakness and weight loss.

Pathology

The primary infection may result in a solitary granuloma, sometimes microscopic in size, often a small macroscopic lesion, and rarely a large one up to about the size of one half of a lung. Sometimes there are several small granulomas throughout the lungs. The lymph nodes of the lung often contain granulomas that sometimes result in considerable enlargement of the nodes. Sometimes, particularly in the dog, there may be miliary infection of both lungs. Often in cattle, infection of the lung's lymph nodes can easily be detected, but no grossly visible granulomas can be found in the lung tissue. After about two to three months, the body's healing processes usually have reduced the size of the granulomas in the cattle lungs and their lymph nodes; in many cases the graulomas are no longer grossly visible (figs. 15-19).

Dissemination of the infection beyond the thoracic cavity can occur in a few weeks or months and has been seen in dogs, horses, sheep, a llama, a monkey, a gorilla and rodents. Once dissemination begins, almost any organ and tissue is susceptible to attack. The liver, spleen, and kidneys are often found affected. In the dog, bones many times are affected with granulomas develop-

Fig. 11. Dog with lesion disseminated to the left carpus.

Fig. 12. Dog with disseminated coccidioidomycosis. Note the cachexia and lameness.

Fig. 13. Dog with disseminated coccidioidomycosis. Note the cachexia and lameness.

ing at the epiphyseal junction (figs. 20-21).

Gross observations of the lesions alone can result in confusion with various other granulomatous conditions.

Diagnosis

Unless the animal has been in the known endemic area there is little need to consider the possibility of this condition, although infection via fomites can occur. Complete lack of response of a respiratory condition to therapy with the usual antibiotics can give cause for suspicion. In the dog, the following of a chronic respiratory condition with emaciation and lameness should be considered as possible coccidioidomycosis. In the live animal the skin test with undiluted coccidioidin is useful in determining whether the animal has been infected. It is read at 24 to 48 hours in omniverous and carniverous animals and at 72 to 96 hours in herbiverous animals. It is believed that immunity to coccidioidomycosis is almost lifelong and skin sensitivity usually persists for many years. The skin test may be negative in some disseminated cases. At the onset of infection an animal may be skin test negative. A few weeks later, if tested, conversion to a positive skin test constitutes positive diagnosis.

The precipitin test on the sera may be of use in indicating a recent infection. The complement fixation test on sera may be of some use in indicating recent infections, but these antibodies are most pronounced during dissemination. (At present serological tests are available for animals for research purposes only.)

Finding spherules of the organism in sputum, urine, exudate from draining lesions — or in biopsy specimens and lesions noted upon postmortem examination — constitutes valid diagnosis. Growing a white cottony fungus with typical arthrospore formation in the mycelia from suspicious material, and the subsequent production of typical spherules within 30 days in the peritoneal cavity of a mouse injected with this mycelia, confirms a previously indefinite diagnosis. Growing the fungus in mycelial form should be undertaken only with extreme precautions due to the highly infectious nature of this form of the fungus.

Fig. 14. Dog with disseminated coccidioidomycosis. Note the enlarged left carpus.

Fig. 15. Scattered small granulomas in lungs early in primary coccidioidomycosis in the dog.

Prognosis

Recovery from a primary infection usually occurs. In case of dissemination beyond the thoracic cavity, invalidism or death usually occurs.

Treatment

Although numerous drugs have been tried, there is yet no ideal specific antimycotic commercially available of value against *C. immitis* in the infected animal. Amphotericin B is of some limited value, but it is quite toxic. Only symptomatic treatment is practical for most animals.

Prophylaxis

As yet, there is no preventive vaccine available. Dust control and the least possible exposure to soil results in a lower infection rate per time interval in a given area and a lower dosage rate of infective spores when infection does occur.

Public Health Significance

In general, infected human beings and animals are not considered direct infection threats to other human beings and animals. Feces, urine, wound exudate and saliva of infected dogs sometimes contain numerous sporangia which are not directly infectious if inhaled. However, within one to four days in nature, in a suitable environment outside the animal body, these sporangia

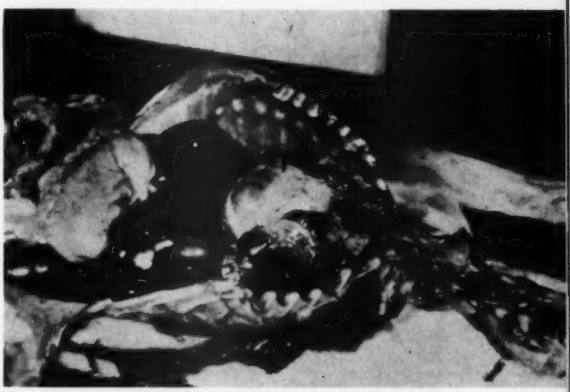


Fig. 16. Lobar pneumonia of primary coccidioidomycosis in the dog.

Fig. 17. Cut sections through two lung lobes solidly infiltrated with primary coccidioidomycosis, (dog).

Fig. 18. Instruments are holding open a typical coccidioidal granuloma in a cow's lung.

Fig. 19. Section cut through human lung showing a granuloma.

Radiograph by B. O. Woodworth, D.V.M.

Fig. 20. X-ray of coccidioidomycosis lesion at distal end of humerus on the right, (dog).

can rupture, put out mycelia, and break up into infective arthrospores. In general, the infected animal may not be an infection threat for a large area, but in a given home or yard the situation may be different. The author has also found sporangia in upper tracheal smears of infected cattle. Meat inspection procedures remove infected tissue from food channels. Even if tissue that contains sporangia is ingested, the fungus is not considered infective via the digestive tract.

Even though infected animals are not likely reservoirs of infection of consequence, a study of coccidioidomycosis as it affects animals can shed much light, particularly on phases such as epidemiology, pathogenesis, development of preventive measures, and therapy. As an example of one phase of an epidemiological study, skin-test surveys on home-raised dairy cattle is proving to be of value in predicting infectivity of a given area for man. Infection rates in cattle are just about the same as in man in a given area if he is living under primitive conditions. Infection rates of persons living under average conditions as they exist around average human habitations in the endemic area are about half those of cattle living in the same general area. Experimental infection studies on *C. immitis* are showing the dog to be a useful experimental animal. With careful technic, dissemination can be made to occur at a consistent rate.[60,61]

Fig. 21. X-ray of coccidioidomycosis lesion in shaft of ulna on the left, (dog).

Radiograph by B. O. Woodworth, D.V.M.

Summary

Coccidioidomycosis has been reported in cattle, dogs, burros, sheep, a horse, a monkey, a gorilla, a chinchilla, and several species of wild rodents. This report covers new cases in cattle, sheep, dogs, a llama, a burro, horses, swine and a tapir. This infection is probably common in many species of mammals in the southwestern United States.

Clinically important infection has been recognized only in the dog. Infected animals and persons are not considered directly infectious to each other.

A study of the infection as it occurs in animals will no doubt shed considerable light on the overall epidemiology and other aspects of coccidioidomycosis and this will assist in better understanding the infection of man.

REFERENCES

1. Merriam, C. H., Life Zones and Crop Zones of the United States. U.S.D.A. Div. Biol. Survey Bul: No. 10, 1898.
2. Maddy, K. T., Ecological Factors of the Geographic Distribution of *Coccidioides immitis*. *Jour. Am. Vet. Med. Assn.* 130:475, 1957.
3. Maddy, K. T., Ecological Factors Possibly Relating to the Geographic Distribution of *Coccidioides immitis*. Proc. of Symp. on Coccidioidomycosis. Pub. Health Serv. Pub. No. 575, December 1957, pp 144-157.
4. Maddy, K. T., The Geographic Distribution of *Coccidioides immitis* and possible Ecologic Implication. *Ariz. Med.* 15:178, 1958.
5. Ochoa, A. G., The Status of Fungus Diseases in Mexico. *Therapy of Fungus Diseases*. Ed. by Sternberg, T. H. and Newcomer, V. D., Boston, Mass., Little, Brown, and Co. 1955, pp 66-72.
6. Gomez, R. F., Endemism of Coccidioidomycosis in the Paraguayan Chaco. *Cal. Med.* 73:35, 1950.
7. Posadas, A., Un Nuevo Caso de Micosis Fungoidea Con Psorospermias. *Ann. Circ. Med. Argentine.* 15:585, 1892.
8. Campins, H., Scharyj, M. and Gluck, S. V., Coccidioidomycosis (Enfermedad de Posadas) su Comprobacion en Venezuela. *Archiv. Venezol. Patol Trop. y Parasit. Med.* 1:215, 1949.
9. Smith, C. E., Coccidioidomycosis. *Ped. Clinics of No. Amer.* 2:109, 1955.
10. Negroni, P., Estudios Sobre el *Coccidioides immitis* Rixford et Gilchrist: XIII. Consideraciones Sobre la Endemia Americana a proposito de una Nueva Observacion. *Rev. Inst. Malbran*, 15:373, 1953.
11. Gomez, R. F., Investigaciones Sobre le Endemia de Coccidioidomycosis en la zona central del Chaco, Paraguayo; sus Primeros Resultados. *An. Fac. Med. Montevideo*, 35:639, 1950.
12. Giltner, L. T., Occurrence of Coccidioidal Granuloma in Cattle. *Jour. Agric. Res.* 14:533, 1918.
13. Davis, C. L. and Stiles, G. W., Coccidioidal Granuloma in Calves. *Jour. Am. Vet. Med. Assn.*, 92:562, 1938.
14. Davis, C. L., Stiles, G. W., and McGregor, A. N., Pulmonary Coccidioidal Granuloma. *Jour. Am. Vet. Med. Assn.*, 91:209, 1937.
15. Stiles, G. W., Shahan, M. S. and Davis, C. L., Coccidioidal Granuloma of Cattle in Colorado. *Jour. Am. Vet. Med. Assn.*, 82:928, 1933.
16. Beck, M. D., Traum, J., and Harrington, E. S., Coccidioidal Granuloma: Occurrence in Animals Reference to Skin Tests. *Jour. Am. Vet. Med. Assn.*, 78:490, 1931.
17. Beck, M. D., Occurrence of *Coccidioides immitis* in Lesions in Slaughtered Animals. Proc. Soc. Exptl. Biol. Med., 26:534, 1929.
18. Stiles, G. W. and Davis, C. L., Coccidioidomycosis. *Jour. Am. Med. Assn.* 119:765, 1942.
19. Davis, C. L. and Anderson, W. A., Postmortem and Laboratory Diagnosis of Bovine Granulomas Encountered in Meat Inspection with Special Reference to Tuberculosis. Proc. U. S. Liv. San. Assn. 55th Ann. Meet. 282-285, 1951.
20. Prchal, C. J., Coccidioidomycosis of Cattle in Arizona. *Jour. Am. Vet. Med. Assn.* 112:461, 1948.
21. Maddy, K. T., Coccidioidomycosis of Cattle in Southwestern United States. *Jour. Am. Vet. Med. Assn.*, 124:456, 1954.
22. Prchal, C. J., Coccidioidomycosis in Arizona Cattle. Proc. of Symp. on Coccidioidomycosis. Pub. Hlth. Serv. Pub. No. 575, December 1957, pp. 105-106.
23. Palmer, J. S., Coccidioidomycosis Survey of Dairy Cattle in Southern Utah—1955. In press, 1958.
24. Farness, O. J., Coccidioidal Infection in a Dog. *Jour. Am. Vet. Med. Assn.* 97:263, 1940.
25. Farness, O. J., Coccidioidomycosis. *Jour. Am. Med. Assn.* 116:1749, 1941.
26. Smith, H., Coccidioidomycosis in Animals, with Report of a New Case in a Dog. *Am. Jour. Path.* 24:223, 1948.
27. Spreigel, J. M. and Milliff, J. H., Coccidioidomycosis in a Dog. *Jour. Am. Vet. Med. Assn.*, 112:244, 1948.
28. Jasper, D. E. and Lewis, J. S., Coccidioidomycosis in the Dog. *N. Am. Vet.* 32:37, 1951.
29. Cordy, D. R. and Hoop, J. D., Coccidioidomycosis in the Skeleton of a Dog. *N. Am. Vet.* 34:44, 1953.
30. Watson, B., Coccidioidomycosis in a Dog. *Iowa State Col. Vet.*, 15:93, 1953.
31. Eville, T. B., Case Report—Male Boxer. *Calif. Vet.* 7:21, 1954.
32. Hage, T. J. and Moulton, J. E., Skeletal Coccidioidomycosis in Dogs. *Cornell Vet.* 44:489, 1954.
33. Levan, N. E. and Burger, C. H., Coccidioidomycosis in Dogs. A Report of Three Cases. *Calif. Med.* 83:379, 1955.
34. Short, G. E., Schleicher, E. M., and Rice, W. M., Coccidioidomycosis in a Kansas Dog. *Jour. Am. Vet. Med. Assn.* 127:352, 1955.
35. Cordy, D. R., Coccidioidomycosis in a Dog. *Jour. Am. Vet. Med. Assn.*, 127:522, 1955.
36. Plummer, P. J., Coccidioidomycosis with a Pathological Report of a Case in a Dog. *Canad. Jour. Med. & Vet. Sci.* 5:146, 1941.
37. Reed, R. E., Serology and Coccidiodin Skin Testing in Diagnosis of Canine Coccidioidomycosis. Proc. Book Am. Vet. Med. Assn. 91st Ann. Meet. Seattle, August 23-26, 1954, pp 199-203.
38. Reed, R. E., Diagnosis of Disseminated Canine Coccidioidomycosis. *Jour. Am. Vet. Med. Assn.* 128:196, 1956.
39. Ajello, J., Reed, R. E., Maddy, K. T., Burdurin, A. A., and Moore, J. C., Ecological and Epizootiological Studies on Canine Coccidioidomycosis. *Jour. Am. Vet. Med., Assn.*, 129:485, 1956.
40. Straub, M. and Schwartz, J., Coccidioidomycotic Thoracic Lesions in Dogs in Tucson, Arizona. *Am. Med. Assn. Arch of Path.*, 62:479, 1956.
41. Reed, R. E., Nonfatal Coccidioidomycosis of Dogs. Proc. of Symp. on Coccidioidomycosis. Pub. Health Service Pub. No. 575, Dec. 1957, p. 101.

42. Reed, R. E., Coccidioidomycosis in Dogs. Proc. of C.D.C. Conference for Teachers of Veterinary Public Health and Preventive Med. and Pub. Health Workers, Comm. Dis. Center Pub. Health Serv. Atlanta. In press, 1958.
43. Reed, R. E., Canine Coccidioidomycosis. *Southwestern Vet.* 12:26, 1958.
44. Maddy, K. T., A Study of One Hundred Cases of Disseminated Coccidioidomycosis in the Dog. Proc. of Symp. on Coccidioidomycosis Pub. Health Serv. Pub. No. 575, December 1957, pp 107-118.
45. Maddy, K. T., Disseminated Coccidioidomycosis of the Dog. *Jour. Am. Vet. Med. Assn.* 132:483, 1958.
46. Miller, D., Unpublished laboratory reports of Arizona Livestock Sanitary Board Laboratory, Phoenix, Arizona. 1943, 1944 and 1945.
47. Dungan, J. T., unpublished data, 1957.
48. Zontine, W. J., Coccidioidomycosis in the Horse —A case Report, *Jour. Am. Vet. Med. Assn.*, 132:490, 1958.
49. Wilding, J. L., Kimball, A. W., Whitaker, M. S., Trum, B. F., Rust, J. H., Some Blood Values of the Southwestern Burro (*Equus asinus asinus*). *Am. Jour. Vet. Res.*, 13:507, 1952.
50. Beck, M. D., Occurrence of *Coccidioides immitis* in Lesions of Slaughtered Animals. Proc. Soc. Exptl. Biol. and Med. 26:534, 1929.
51. Prchal, C. J., Unpublished laboratory Report., 1955.
52. Maddy, K. T., Coccidioidomycosis in a Sheep. *Jour. Am. Vet. Med. Assn.* 124:465, 1954.
53. Jones, E. E., Unpublished laboratory reports, California Livestock and Poultry Pathology Laboratory, San Gabriel, California, 1952 and 1954.
54. McKenney, F. D., Traum, J., and Bonestell, A. E., Acute Coccidioidomycosis in a Mountain Gorilla (Gorilla Beringeri) with Anatomical Notes. *Jour. Am. Vet. Med. Assn.* 104:136, 1944.
55. Schroeder, C., Unpublished laboratory report of San Diego, California Livestock Dept. (no. 11581), 1956.
56. Jasper, D. E., Coccidioidomycosis in a Chinchilla. *N. Am. Vet.*, 34:570, 1953.
57. Emmons, C. W. and Ashburn, L. L., The Isolation of *Haplosporangium parvum* N. Sp. and *Coccidioides immitis* from Wild Rodents. Their Relationship to Coccidioidomycosis. Publ. Hlth. Rep. 57:171, 1942.
58. Jellison, W. L., Emmons, C. A., Holmes, M. A., Kohls, G. M., Shippee, E. A., and Fullerton, W. J., Isolation of *Coccidioides immitis* from Rodents in Utah. In press, 1958.
59. Rector, L. E., and Rector, E. J., Coccidioidomycosis in the Salivary Gland of the Townsend Mole. *Am. Jour. Trop. Med.* 28:707, 1948.
60. Hugenholtz, P. G., Reed, R. E., Maddy, K. T., Trautman, R. J., and Barger, J. D., Experimental Coccidioidomycosis in Dogs. *Am. Jour. Vet. Res.*, 19:433, 1958.
61. Reed, R. E., Experimental Canine Coccidioidomycosis. *Southwestern Vet.* 11:275, 1958.

Dean Leasure Visits India

Dean E. E. Leasure

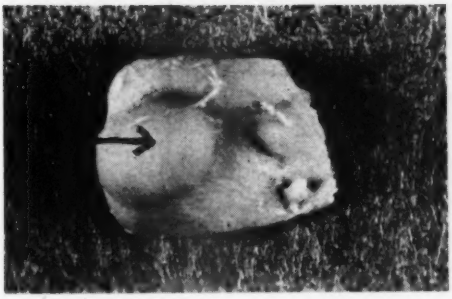
The education program in India for agriculture and veterinary medicine has improved greatly since 1955, reports Dr. E. E. Leasure, dean of the Kansas State College School of Veterinary Medicine.

Dean Leasure was in India in 1955 for three months as a member of an Indian-American team surveying the agricultural and veterinary medicine educational and research programs for that country. He has recently returned to the United States from another five week inspection trip to India where he helped review work of a K-State technical assistance team.

Dean Leasure said best evidence of the tremendous progress being made "is evidenced by India's increased tempo of providing adequate facilities for instructional programs in the general areas of agriculture, including veterinary medicine, dairy husbandry, animal husbandry, home science, crops, and agronomy."

The central government of India has authorized establishment of a separate university offering graduate work only leading to M.S. and Ph.D. degrees in veterinary bacteriology, pathology, physiology, animal nutrition, and animal science. This program already is well along under leadership of Dr. I. D. Wilson, a Virginia Polytechnic Institute man who was hired as deputy group leader of the K-State technical assistance team in India last summer. The first class for the graduate school was accepted last fall.

Efforts to determine cause of dwarfism in cattle resulted in these observations on adrenal glands. Surface view of nodular hyperplasia in the capsule of the right adrenal gland in a test animal V1486 is shown at right (5 magnifications).



Capsules of Adrenal Glands in Cattle

JOHN M. DELPHIA, M.S., Ph.D., D. F. EVELETH, Ph.D., D.V.M., F. M. BOLIN, D.V.M. and M. L. BUCHANAN, M.S.

Department of Zoology
Department of Veterinary Science
and Department of Animal Husbandry
Fargo, North Dakota

THIS ARTICLE reports the result of observations on the adrenal glands of dwarfs, non dwarfs and animals with dwarf carrier pedigrees. Dwarf carrier pedigrees show that the family involved has produced dwarf animals. All animals belonged to North Dakota Agricultural Experiment Station. At the time of sacrifice or death certain endocrine glands were collected for histological examination.

Literature Review

Previous writers[3,4] have reported cysts in the adrenal glands of dwarf Hereford cattle. Delphia, et. al.[2] noted islands of cortical tissue in the capsule of an adrenal gland in a castrated dwarf Hereford male. Soffer[5] and Anderson[1] indicate that castration results in corticular or nodular hyperplasia within the capsules of the adrenal glands. Accessory lymph node development has been observed in the peritoneal regions of numerous mammals.

Materials and Methods

The adrenal glands were bisected and one-half placed in Bouin's fluid while the other was placed in Lavdowsky's fluid. Gross examination with a 10X binocular microscope was done to determine areas for further study by means of routine histological technic.

Observations

Table 1 reveals the age, sex, breed, status of the animal in regard to dwarfism and the presence of lymph nodules and nodular hyperplasia in the adrenal capsule.

The only case showing a lymph nodule development in the capsule is that of N376-2. Two distinctly separate nodules were seen in the capsule of each adrenal gland of this castrated adult male Hereford. The pathology of the lymph nodules is being studied further. The larger areas of nodular hyperplasia appear as cyst-like swellings within the adrenal capsules. The nodular hyperplasia in all cases gives the appearance of corticular tissue from the outer layer of the adrenal cortex. V1486 (above) and N365 possessed nodular hyperplasias directly connected to the adrenal cortex. The other cases of hyperplasia in the capsules were not found to be connected to the cortex.

Published with approval of the Director, North Dakota Agricultural Experiment Station.

Progress Report on Project H76R NC 1 and National Institutes of Health grant no. H3264.

Discussion and Summary

The present work involves four breeds of cattle at varying ages. Nodular hyperplasia was observed in the following: a two-month-old, non-dwarf, Guernsey male; two adult dwarf Hereford castrate males; one adult dwarf Angus female; two adult non-dwarf dwarf-carrier Hereford castrate males and two adult, non-dwarf, dwarf-carrier Hereford females. No hyperplasia was found in the following: a newborn dwarf Hereford male; a two-month-old dwarf Angus male; an adult dwarf Shorthorn female; five adult dwarf-carrier Hereford castrate males; and one adult dwarf-carrier Hereford female.

Previous workers[3,5] with other mammals have cited the effect of castration on the adrenal cortex as being one of nodular hyperplasia. The above data show nodular hyperplasia in a non-dwarf male (non-castrate) and dwarf and non-dwarf females from various breeds. We have been unable to find any previous reference regarding the effects of either age or breed on the nodular hyperplasia in the capsules of the adrenal glands. No conclusion in regard to the relation of adrenal nodular hyperplasia to castration or dwarfism can be reached from the limited number of cases available.

REFERENCES

1. Anderson, W. A. D., *Pathology*. C. V. Mosby, St. Louis, Mo, 1957.

2. Delphia, J. M., Bolin, F. M., Eveleth, D. F., and Buchanan, M. L., A Study of Certain Endocrine Glands from two "Sterile" Hereford Dwarf Cattle. *Jour. Am. Vet. Med. Assn.*, in press.

3. Fransen, J. M., and Andrews, F. N., The Physiology of Dwarfism in Beef Cattle. *Jour. Ani. Sci.* 13:1020, 1954.

4. Lindley, C. E., Observations on Midgets in Beef Cattle. *Jour. Heredity* 42:273, 1952.

5. Soffer, L. J., *Diseases of the Endocrine Glands*. Lea and Febiger, Philadelphia, Penn., 1951.

TABLE 1. Hyperplasia in Adrenal Capsules

Animal	Type of Pedigree	Breed	Sex	Age	Age of Castration	Lymph node in Capsule	Nodular Hyperplasia
N343	Dwarf	Hereford	M	4 days			
N360	Dwarf	Angus	F	17 mo.			B
N365	Dwarf carrier	Hereford	M	19 mo.	3 mo.		A
N368	Dwarf carrier	Hereford	M	18 mo.	3 mo.		
N376-1	Dwarf	Hereford	M	34 mo.	30 mo.		B
N376-2	Dwarf carrier	Hereford	M	27 mo.	3 mo.	X	B
N376-3	Dwarf carrier	Hereford	F	34 mo.			B
N376-4	Dwarf carrier	Hereford	M	28 mo.	4 mo.		
N376-5	Dwarf carrier	Hereford	F	28 mo.			B
N376-6	Dwarf carrier	Hereford	F	27 mo.			
N376-7	Dwarf carrier	Hereford	M	27 mo.	4 mo.		
N376-8	Dwarf carrier	Hereford	M	27 mo.	4 mo.		
N376-9	Dwarf	Hereford	M	46 mo.	42 mo.		A
N440	Dwarf carrier	Hereford	M	15 mo.	3 mo.		
N445	Dwarf	Shorthorn	F	72 mo.			
N446	Dwarf	Angus	M	2 mo.			
V1486	non-Dwarf	Guernsey	M	2 mo.			AB

A = node connected to adrenal cortex; B = node not connected to adrenal cortex.

Practitioner's Laboratory

W. L. SIPPEL, V.M.D., Ph.D.

Florida Livestock Board
Kissimmee, Florida

Liver Fluke Egg Counting

WHILE this technic is more complex than the flotation method for nematode eggs, it can be carried out in the office laboratory by those caring to assemble the necessary simple equipment (fig. 1). Fluke eggs will not rise in solutions used for intestinal parasite eggs and are distorted by hypertonic solutions that will float them.

Dennis, Stone and Swanson[1] have described a simple accurate technic which we have found quite useful.

Materials

1. Detergent solution: 5 ml. of liquid detergent (Joy—Proctor and Gamble) in 995 ml. water to which add eight drops of 1% solution of alum.
2. A tin funnel with 60-80 mesh copper screen soldered one inch from top.
3. Paper cups or large test tubes and stirring rods.
4. 50 ml. centrifuge tubes.[2]
5. Tincture of iodine.
6. Flat bottomed Petri dish.[3]
7. Microscope—wide-field best, but low power of standard type will suffice.

Technic

1. Feces (1 gm.) are placed in a large test tube or paper cup; 15 ml. of the detergent solution is added and stirred with the rod without producing foaming.
2. Strain the suspension through the funnel screen into a 50 ml. centrifuge tube.
3. Rinse out cup or tube with more detergent solution and flush material on screen until 50 ml. tube is nearly full.
4. Allow to stand for 5 to 15 minutes (no longer) and siphon off ¾ of supernate with glass tube and rubber bulb or very carefully pour off supernate. A siphon can be made by bending a glass tube into a U shape with one side longer than the other. This is filled with water and holding a finger over the end of the long side, the end of the short side is inverted in the solution to be siphoned.
5. Rewash material in funnel with agitation into the same tube, using more detergent solution.
6. Allow to stand 5 to 15 minutes longer, siphon off and discard all but 2 or 3 ml. in bottom of the tube.
7. Add one to three drops of tincture of

Fig. 1. Equipment necessary for examining feces for liver fluke eggs.

Fig. 2. Fluke egg. Note operculum at left hand end. Internal structure stains brown in described technic.

iodine, quantity depending on amount of debris in the sediment.

8. Transfer sediment to flat bottom Petri dish[3] and rinse out tube with water to make a total of 15 ml. in dish.

9. By careful movement of dish, count brown oval fluke eggs in container. Parallel lines scratched on bottom of the dish ¼ in. apart facilitate the counting.

The number of eggs in the dish is the eggs per gram of stool. The iodine stains the fluke eggs a brown color (fig. 2). The liver and rumen fluke eggs are large (130-150 x 60-90 microns), being about 70% larger than the stomach worm eggs. An operculum can usually be seen on one end; however, in some eggs very careful focusing or examination under higher magnification may be required to see it.

Care must be taken to distinguish between rumen fluke and liver fluke eggs. The rumen fluke eggs and the yolk granules comprising their inner structure are usually larger than those of the liver fluke eggs. The opercular end of the rumen fluke eggs is somewhat elongated.

If it is desired only to know if the animal is infested or not, the quantities of feces and solutions used above can be ignored. More feces can be used and only approximations made of the quantities of fluids.

Lapage[4] indicates that 100 to 200 Fasciola eggs per gram in cattle indicate the advisability of treatment, whereas 300-600 eggs per gram in sheep are apt to be pathogenic. As a method to prevent reinfestation of pastures, Euzeby[5] recommends treatment of all infested animals.

REFERENCES

1. Dennis, W. R., Stone, Wm. M., and Swanson, L. E., A New Laboratory and Field Diagnostic Test for Fluke Ova in Feces. *Jour. Am. Vet. Med. Assn.*, 124:47, 1954.
2. E. H. Sargent Co., 4647 W. Foster Ave., Chicago 30, Ill., Cat. #S18035.
3. E. H. Sargent Co., 4647 W. Foster Ave., Chicago 30, Ill., Cat. #S25950.
4. Lapage, G., Monnig's Veterinary Helminthology and Entomology, 4th Edition, Williams & Wilkins Co., Baltimore, Md., p. 477.
5. Euzeby, G., Doeksen, Jr., Latteur, J. P., Prevention of Parasitic Diseases Among Sheep and Cattle at Pasture. O.E.E.C. Rpt. Project #204, Suite #223-1346, Connecticut Ave., N.W., Washington 6, D. C.

Legal Environment of Medical Science

The hodge-podge of laws and regulations now governing medical research obstructs and imperils progress in the life sciences, according to Dr. Lester R. Dragstedt, president of the National Society for Medical Research and Professor of Surgery at the University of Chicago School of Medicine. To bring order into this chaotic situation, the Society, in conjunction with the University of Chicago has called the first National Conference on the Legal Environment of Medical Science. The meeting will be held May 27-28 on the University of Chicago campus.

Because in 39 states you can will your automobile, your house, or your bank account, but cannot bequeath your cornea to an eye bank, or your own body to a medical school for research, scientists are facing a critical lack of materials for research in anatomy, pathology and organ transplants.

"In an era when physical science knows no limits," Doctor Dragstedt stated, "biology and medical advances are thwarted by jerry-built laws which were mainly enacted before the new medical possibilities appeared on the horizon."

Physicians, scientists, and lawyers also are confused over legal rights and responsibilities toward human beings serving in trials of new medical treatments. Practical problems such as access to cadavers and obtaining animals for humane use in laboratories have stimulated the Society, whose membership includes all the accredited medical schools and most medical research associations, to issue a call for clarification of standards.

Participants will include scientists, legal scholars, religious leaders and representatives of various groups affected by differing practice.

SMALL ANIMAL PRACTICE

*"tamed iodine"**

now in 3 convenient forms

Weladol®†

(Polyalkyleneglycol Iodine Complex)

CREME, SHAMPOO AND NEW DISINFECTANT

gives you iodine's potent fungicidal and bactericidal action

. . . *without* iodine's characteristic toxicity, irritation or stain

Weladol . . . 6 years in the laboratories . . . 3 years in clinical evaluation . . . has been used successfully and safely in a wide range of hard-to-manage skin conditions of dogs, cats, horses and other species of large and small animals.

†U. S. Patent No. 2,759,869 *Trademark

Weladol Shampoo in 4 fluid ounce plastic bottles and 1 quart glass bottles
Weladol Creme in 1 ounce and 1 pound jars
Weladol Disinfectant in gallon bottles

PITMAN-MOORE COMPANY DIVISION OF
ALLIED LABORATORIES, INC.
Indianapolis 6, Indiana

Every veterinarian encounters cases which could involve the salivary glands or their ducts. A practical radiographic technic is presented for the dog that makes it possible to determine the presence of any abnormality within these structures.

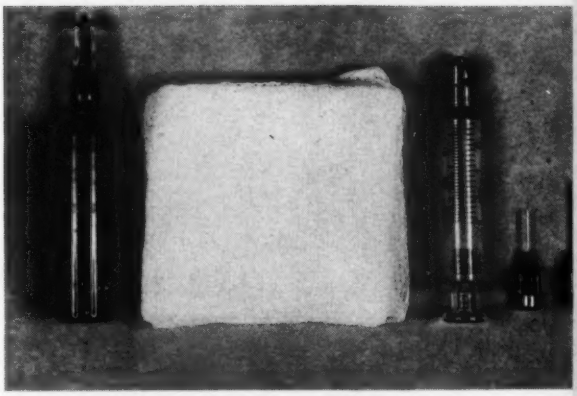


Fig. 1. The materials required for Sialography are a suitable contrast medium, gauze sponges, a glass syringe and cannula.

The Technic of Sialography in the Dog

A. J. CAWLEY, D.V.M., M.V.Sc.
BRIAN SORRELL, D.V.M.

Department of Clinical Studies
Ontario Veterinary College
and General Practitioner
Guelph, Ontario

ALTHOUGH THE INCIDENCE of pathological entities of the salivary system is low, every veterinarian encounters such cases, or other pathological alterations which could involve the salivary glands or their ducts. Sialography makes it possible to determine the presence of any abnormality in the structure of the salivary ducts within the salivary glands. It is possible to demonstrate the presence of an obstructive lesion, rupture, or abnormality in the position, size and shape of the salivary ducts. Inflammatory lesions or tumors of the salivary glands produce alterations in the filling of minor ducts within the salivary glands. This fact is most important in determining whether abscesses which involve the face of the dog extend to the salivary glands. The

Fig. 2. The site of the opening of the duct of the mandibular salivary gland is indicated by the inserted cannula.

Fig. 3. The course of the duct of the normal mandibulary salivary gland and its arborizations are outlined by 40% Skiodan acacia.

Fig. 4. The tip of the cannula is inserted into the duct of the parotid salivary gland and clearly indicates the site at which this duct opens.

series of sialograms on which this paper is based was produced as a preliminary phase in the study of salivary cysts. Both mandibular and parotid glands of the dog can be studied by sialography.

Technic

The most satisfactory way in which to handle the patient involves the use of a general anaesthetic, since the slightest movement on the part of the patient will foil any attempt to introduce a cannula into the salivary ducts. An ultra-short-acting anaesthetic will suffice if no difficulty is encountered in cannulating the salivary duct.

Materials

The materials required for sialography are a cannula, a 2 cc. all glass syringe, a suitable contrast medium, and gauze sponges (figure 1). A satisfactory cannula can be made from a half-inch 24 gauge needle from which the point and all sharp edges have been ground. Any sharp edge on the tip of the cannula will make its introduction into the salivary duct more difficult. The rigidity afforded by a needle is advantageous in probing the salivary duct provided that this is done with great care.

The contrast medium of choice in sialography should be of low viscosity, highly radiopaque, non-irritating to the salivary gland tissue, and rapidly absorbed. These qualities are possessed by Skiodan (Winthrop) 40% with acacia. In view of the rapidity with which Skiodan is absorbed, it is necessary to have satisfactory exposure factors worked out on the patient before the contrast medium is injected. Films should be taken immediately after injection, since a delay of over one minute will result in an indistinct duct pattern due to presence of dye in the salivary gland tissue. In three to five minutes there will be complete absorption of the Skiodan. The volume of contrast medium required to outline the

salivary ducts of a dog is approximately 1 cc. There is little variation except in dogs weighing less than 15 lb. or more than 80 lb. An excessive amount of dye will result in loss of detail of the finer duct structures. In such an instance the salivary gland injected will become exceedingly hard in consistency.

The mandibular salivary ducts open laterally on the sublingual papillae at the anterior end of the frenulum (figure 2). The opening appears as a minute red spot, from which the cord-like duct can be seen coursing caudad under the mucosa of the frenulum. Positive identification can be made by drying the saliva from the area, then massaging the mandibular gland. A tiny bead of saliva will appear at the duct opening. The cannula is then placed on the spot from which the saliva oozed after the spot has again been mopped dry. With good lighting, patience and delicate manipulation, the cannula can be inserted at about a 30 degree angle to the median line, with its tip pointing caudally. Once the cannula enters the duct, its hub is brought towards the midline and its tip directed along the duct until the hub contacts the duct opening, and is snugly apposed. The syringe containing 40% Skiodan acacia is fitted to the needle, and the contrast medium is injected. Care is taken that air does not enter the salivary duct, and that dye does not leak back around the needle. A radiograph in the lateral projection with the head fully extended provides the best visualization of the mandibular gland.

The duct of the mandibular salivary gland has been shown to wind tortuously caudad to a point immediately lateral to the glottis where it enters the gland itself. On entering the gland the duct divides into a number of branches, which vary in each individual and even from side to side. The average number of major branches encountered in this series was three (figure 3).

Visualization of the parotid salivary gland and its duct is obtained in much the same manner as that for the mandibular. Variations in the size of cannula may be necessary here; large dogs have a duct

Fig. 5. The sialogram of the parotid gland taken in the ventro-dorsal position shows the entry of the duct into the gland from its medial surface.

Fig. 6. The course of the parotid salivary duct and its position relative to the salivary gland are evident.

large enough to admit a 22 gauge, 1 in. needle. Small dogs and cats may only be able to accommodate a 26 gauge needle.

The opening of the parotid duct occurs within the mouth on the inner surface of the lip, opposite the fourth cheek tooth, (figure 4). It is situated on the top of a small papilla. Identification is possible by means of the saliva exuded from it. One may be misled by the presence of another shorter duct, situated ventral to the one described above. This is the duct of the orbital salivary gland.

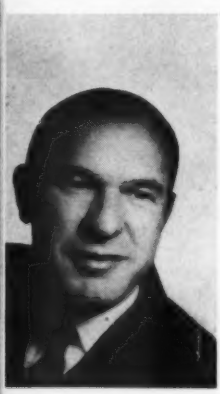
As before, once the needle is snugly inserted into the duct, Skiodan 40% is injected. Radiographs of the parotid gland should be taken in both the ventro-dorsal and lateral positions. The former projection will show the parotid duct as it enters the salivary gland (figure 5).

The parotid duct courses caudad from its papilla on the cheek to enter the gland in its ventral portion (figure 6). The average number of major branches of this duct within the gland tissue is four.

Summary

A technic has been described whereby the duct system of the mandibular and parotid salivary glands can be visualized on radiographs.

Morris Animal Foundation Names New Members



LEFT
Dr. W. J. Zontine

RIGHT
Dr. William D. Carlson

LEFT
Dr. Clarence R. Cole

Two new members have been added to the Board of Trustees and three new members to the Advisory Committee of the Mark L. Morris Animal Foundation of Denver.

Named to the Board of Trustees were Dean William A. Hagan of New York State Veterinary College, Cornell University, and Dr. George R. Cowgill, Professor of Nutrition, Yale University.

Both had previously served on the Foundation's Advisory Board.

Named to the Advisory Board were Dr. W. J. Zontine, practitioner of Lancaster, California; Dr. William D. Carlson, Associate Professor and Radiologist, Colorado State University and Dr. Clarence R. Cole, Professor of Veterinary Pathology, Ohio State University.

Other members of the Board are Dr. Charles W. Bower, Topeka, and Dean E. C. Stone of the State College of Washington.

The Foundation currently is sponsoring research projects at State College of Washington, University of Minnesota, University of Illinois, Michigan State University, Alabama Polytechnic Institute, University of Pennsylvania, and Oklahoma State University.

The Animal Bite Problem

DUANE BROBST, D.V.M., M.P.H., HENRY M. PARRISH, M.D., M.P.H. and FRANK B. CLACK, V.M.D., M.P.H.

Allegheny County Health Department
and St. Clair Hospital
Pittsburgh, Pennsylvania

THE pet animal population in the United States has been increasing rapidly in recent years and, according to Carithers,[1] there are probably about 25,000,000 dogs and 35,000,000 cats in this country. The pleasures of owning pets, particularly dogs, far outweigh the dangers resulting from bites and diseases that animals may cause and the nuisance that they may be in a community. Perhaps these joys and pleasures traditionally cause Americans to resist regulation and licensing of dogs.

Accompanying the pleasures which animal pets provide are also the problems of animal bites, rabies, and other diseases transmissible from animal to man. An increasing pet population in a country that has endemic rabies represents a growing potential for that disease. In the treatment of animal bite victims the possibility that the offending animal was rabid must be considered. Communities which are not troubled with rabies still face the problem of controlling pet animals and preventing man from being bitten and injured by pets.

The Problem

It has been estimated that approximately 600,000 persons are bitten by dogs each year in the United States; 5 to 10% of the victims have to take antirabies vaccine and about $5,000,000. is spent annually for medical care and public health activity.[2,3] Barclay[4] in England reported that during a 2½ year period, 1% of all admissions to a plastic surgery center were for the repair of dog bite wounds about the face. During a four year study (1950-1954) in an American hospital, Ford[5] found that 1.84% of all emergency patients were treated for bites of all types and that 1.64% (one of every 60 persons) were treated for dog bites.

The vital statistics of the United States for 1955 list 178 deaths among human beings resulting from accidents caused by animals.

*Based on an animal bite rate of 362 per 100,000 population for a population of 168,914,000 for the United States as reported by the United States Bureau of the Census in Statistical Abstract of the United States: 1957. Ed. 78, Washintgon, D. C., U. S. Government Printing Office, 1957.

(International List of Causes of Death no. 928.)[6] A study of these death certificates showed that in ten of these deaths dogs were responsible directly or indirectly. Five of the ten deaths resulted directly from bites, one death was due to post-vaccinal encephalitis following anti-rabies treatment, and four deaths were related to dogs through injuries other than bites. In addition to these ten deaths classified as accidents involving dogs, there were five deaths of human beings after contacting rabies as a result of bites of dogs and other animals.[7]

Perhaps of greater concern than the cost of dog bite treatment, cosmetic problems due to facial wounds, and the immeasurable loss in wages due to injuries, is the mental anguish that parents suffer when their child is bitten by a dog. This emotional strain is intensified if the dog should happen to be a stray animal in an area where rabies is endemic. The uncertainity of rabies can be a terrifying experience.

Materials and Methods

The purpose of this study was to determine the incidence of "reported" animal bites in Allegheny County, Penna., and in other selected areas of the United States and to elicit some of the basic facts about animal bites. Some of the factors studied were: The animal species most often inflicting bites to human beings; age and sex of bite victims; anatomical location of bites; months and time of day most bites occurred; and ownership and license status of the offending animals. To facilitate this study, a questionnaire was mailed to many city and county health departments throughout the country asking them to list the number of animal bites and anti-rabies vaccinations reported to them during the past year, and also the number of known rabid animals found in their area. The animal bite report forms of the Allegheny County Health Department, Penna., were used to study the problem in Pittsburgh. These forms contained the necessary information to develop previously mentioned "facts" about animal bites, particularly dog bites.

Reported Incidence

Eleven cities and counties provided information about the animal bite problem in their respective localities. Results obtained from questionnaires are summarized in table 1. Los Angeles City, Calif. provided the highest reported incidence of animal bites — 633.8 per 100,000 population. Jefferson County, Ky. listed the lowest reported animal bite rate — 112.5 per 100,000 population. The rate for Pittsburgh, Penna. was median of the reported bite rates. There was a rate of 362 reported animal bites per 100,000 for the total population of the 11 selected areas.

It is important to realize that these data are related to "reported bites" and do not reflect the "true" incidence of animal bites. Undoubtedly many bites go unreported, especially if an animal bites the owner or if the bite is a minor one. Much of the ap-

TABLE 1. Incidence of Reported Animal Bites, Pasteur Treatments, and Rabid Animals in Eleven Selected Areas of the United States, 1956 and 1957

Area	Year	Estimated Human Population	No. Animal Bites/yr.	Animal Bites 100,000 Population	No. Pasteur Treatments	No. Known Rabid Animals
Cook County, Ill.	1957*	5,000,000	18,000	360.0	?	6
Philadelphia, Pa.	1957	2,500,000	7,221	288.8	100	0
Los Angeles City, Calif.	1956	2,350,000	15,600	663.8	258	38
Jefferson County, Ky.	1956	1,500,000	1,688	112.5	56	46
St. Louis, Mo.	1956	864,000	3,600	416.7	137	11
Pittsburgh, Pa.	1957	750,000	1,700	226.7	?	0
Dallas, Tex.	1956	621,000	2,462	396.5	138	94
Fulton County, Ga.	1957*	553,500	2,160	390.2	42	8
Portland, Ore.	1956	420,000	780	185.7	0	0
Albuquerque, N. M.	1957	220,000	300	136.4	0	0
Ames, Iowa	1957	23,000	65	282.6	0	0
Total		14,801,000	53,576	362.0	731	203

*Data to December 1957.

parent difference in rates is probably not a "true" difference but reflects the efficiency of the various reporting systems. Some of this difference in rates is due to differences in the animal population of the various areas. Thus the true incidence of animal bites is probably much greater than 362 per 100,000 population.

Of considerable interest is the fact that 731 Pasteur treatments were administered for bites. The number of Pasteur treatments in Cook County, Ill. and Pittsburgh, Penna. was not known, but for other areas there were 731 treatments (2.16%) among 33,876 reported bites. Most treatments were given in areas where rabid animals were reported. There was a total of 203 rabid animals found in six of the 11 selected areas. This finding demonstrates the well known fact that rabies is endemic in the United States and that it is by no means confined to one geographical area.

A total of 2,713 animal bite accidents was reported to the Allegheny County Health Department in 1957. Dogs were responsible for 2,411 of these bite accidents; cats, hamsters, squirrels, other pets, and wild animals caused the remaining 302 bites. Thus dogs were the offending animals in 89% of the bites, and a more detailed study of dog bites seemed warranted. Surprisingly few cat bites were reported. In general, cats use claws for scratching as a means of defense rather than biting. Also, most people do not regard cat bites as serious, and many do not realize that cats may develop rabies.

Bite Victims

Which individuals are most likely to be bitten by dogs? Table 2 shows the number of dog bites according to sex and age groups. Of importance is the observation that 48.2% of all dog bite victims were less than ten years of age. Approximately 77% of the dog bites occurred in young persons less than 20 years of age, which includes pre-school and school aged children. Obviously this high frequency of bites in young individuals also reflects a higher bite rate, since persons 20 or less years of age do not constitute a large segment of the general population at risk (approximately 31% for Pittsburgh, Penna.). These findings are in agreement with those made by Carithers.[1] He studied the mammalian bites occurring in 531 children in his pediatric practice over a 20 month period and reported that most bites occurred among children less than ten years of age. That young children should be the most frequent victims of dog bites is probably a result of intimate association with pets and the fact that children are often abusive to pets or do not know how to handle them. Also noteworthy is the observation that about 70% of the bites involved males. This observation held true for every age group from 0-9 through 70 and over. Males are most likely to have dogs as pets; females generally preferring smaller animals such as cats. Also, male children are much more aggressive and daring than female children. In fact, males usually have higher rates than females for almost every type of accident.

TABLE 2. Age and Sex Distribution of Reported Dog Bite Victims Pittsburgh, Pennsylvania During 1957

Age Group (yr.)	Dog Bite Victims			% of Total
	Male	Female	Total	
0-9	513	283	796	48.2
10-19	353	118	471	28.5
20-29	59	21	80	4.8
30-39	75	20	95	5.8
40-49	55	25	80	4.8
50-59	55	20	75	4.5
60-69	26	10	36	2.2
70+	13	7	20	1.2
Total	1,149	504	1,653	100.0

Time of Bites

When are dog bite accidents most likely to happen? Table 3 lists the number of reported dog bites occurring during the different months of the year in Pittsburgh, Penna. If one assumes that the reporting of bites is consistent throughout the year (and there is no reason to doubt its consistency), then there is a striking seasonal distribution for dog bites. The frequency of bites is low during the winter months. After March and April the number of reported bites increase. A peak of bites is reached during the summer months, from May through August. This finding is probably not confined to areas such as Pittsburgh, Penna. and may be related to climate or seasonal variation and to activities of children, the high risk

group. In support of this hypothesis is the fact that the highest incidence occurs during the months in which schools are recessed. Therefore, during the summer months children are "exposed" to dogs more often and thereby run a greater risk of being bitten. During warmer weather dogs are less likely to be confined to the protected environment of the home, and are allowed greater out-of-doors freedom. Certainly these observations are consistent with the clinical impressions of emergency room physicians who observe "epidemics" of dog bites during the summer months.

Perhaps the large number of dog bites during the warmer months of the year may be partly attributed to the nature of the bitch, with mating occurring generally in spring and fall, and with dogs tending to run in packs at these times. This is probably not as great a factor as the increased exposure of children to their pets during the summer vacation.

The days of the week in which 1,653 dog bites occurred in Pittsburgh, Penna. were as follows: Sunday — 14.4%; Monday — 15.0%; Tuesday — 13.0%; Wednesday — 14%; Thursday — 13.8%; Friday — 13.0%; and Saturday — 16.8%. Since about 40% of the bites occurred during the summer, when school is not in session, distribution of bites by day of the week was possibly leveled out even though Saturday remained the one day on which most bite accidents took place.

However, a tabulation of bites for only the school months provided the following results: Sunday — 10.4%; Monday — 8.1%; Tuesday —7.8%; Wednesday — 7.9%; Thursday — 7.3%; Friday — 6.6%; and Saturday — 11.8%. The number of bites that take place on weekends seems more apparent.

The time of the day (hour) during which the bites occurred was obtained from 1,587 of the 1,653 report forms. The number of bite accidents taking place during the different hours of the day was as follows: 1:00 a.m. through 6:59 a.m. — 20 bites; 7:00 a.m. through 12:59 p.m. — 197 bites; 1:00 p.m. through 6:59 p.m. — 761 bites; and 7:00 p.m. through 12:59 a.m. — 609 bites. Clearly, most of the bites (86%) happened from 1:00 p.m. through 12:59 a.m. This time period coincides with man's greatest exposure to animal pets. Most of the bites from 1:00 p.m. through 6:59 p.m. were among pre-school children and school children who returned home in the early afternoon after school was dismissed. This statement is supported by the fact that 32% of all bites took place from 3:00 p.m. to 6:59 p.m. Most adult working people do not return home from work early enough in the afternoon to be included in this period. These findings tend to support the "exposure factor" as being important, especially in children and adolescents. During the summer months, bites among children were evenly distributed throughout the day, from 7:00 a.m. to 9:00 p.m.

TABLE 3. Seasonal Distribution of Reported Dog Bites in Pittsburgh, Pennsylvania, 1957

Month	No. Bites	Month	No. Bites
Jan.	71	Jul.	230
Feb.	75	Aug.	204
Mar.	112	Sep.	134
Apr.	181	Oct.	65
May	233	Nov.	64
Jun.	221	Dec.	63

Location of Bites

Multiple body wounds are not uncommon in dog bite accidents. Indeed, 1,725 separate sites of wounds were listed for the 1,653 dog bite accidents studied. The anatomical location of the wounds is presented in table 4. As one might have supposed, most of the bites were inflicted on the extremities — 42.8% on the lower extremities, and 35.2% on the upper extremities. Bites about the head, face and neck were next most frequent (14.4%). Bites in these locations are often the most serious and disfiguring. Also, the incubation period of rabies is much shorter if a rabid animal sinks its teeth into this area of the body. Ford[5] collected data on 498 dog bites from one hospital and found that 25% of the bites occurred about the head, face and neck. Our figure of 14.4% of bites in this area is much lower than the 25% reported. However, the sample reported by Ford was much smaller than ours and perhaps it is not representative in that it was collected from one hospital. Nonetheless, a significant proportion of dog bites, especially in small children, occur about the

head, face and neck. Contrary to popular belief, bites about the seat of the pants are relatively uncommon.

Status of Dogs

Of 1,653 dogs involved in dog-bite accidents, 78% had owners. The remaining 22% were either stray animals or their owners could not be located. Only 10% of the dogs with known owners had dog licenses for 1957. Of considerable importance was the observation that only 106 out of the 1,653 persons reported bitten said they were bitten by their own dog. One would expect that pet owners would have been bitten more frequently than they reported. These data would seem to confirm the impression that a person bitten by his own dog most often does not report the bite. Probably these individuals feel that their own dogs do not have rabies hence they do not often seek medical attention for minor bites.

Discussion

This survey of reported animal bites in selected areas of the United States indicates that animal bites are by no means rare. If one assumes that the animal bite rate of 362 per 100,000 population for the total surveyed area is representative of bites for the entire country, then we estimate that 611,469 people were bitten by animals in the United States during 1957.* This estimate is in close agreement with the estimate of 600,000 by Steele.[8] This is probably a conservative estimate since many bites are not reported. The true incidence of animal bites probably approaches 1,000,000 per year. Although animal bites, particularly dog-bites, are common occurrences, mortality statistics reveal that they are rarely fatal. Unfortunately, at the present time the severity and sequelae of these bite wounds are not known.

A study of some aspects of the natural history of dog bites in Pittsburgh showed that these bites have a definite pattern. Gordon[9] has pointed out that most diseases, infectious and noninfectious, have definite biological patterns. At the present time there is much interest in the epidemiology of noninfectious diseases. Applying epidemiological concepts to dog bites, one might reason that these bites result from an interaction of the agent (dog), the host (man), and the environment. Parrish[9] has demonstrated such an interaction in the case of poisonous snakebites. In this preliminary study we have attempted to answer who is bitten, when they are bitten, what animals inflict the bites and the part of the body which is injured. Future studies on how and why animal bites occur may provide important clues for their prevention and control.

The problem of controlling animal bites is inseparable from the control of rabies. Lepine[10] estimated that rabies is transmitted to man by the following animals: Dogs (86%), cats (5%) wild carnivores (3.5%), and ruminants (2%). The present study would seem to indicate that in this country most animal bites in man are inflicted by dogs. The key to a successful control program rests on an adequate reporting system for all animal bites. Report form should be provided by the health department for practicing physicians, veterinary physicians, hospitals, police and other individuals and agencies noting animal bites. These individuals and organizations should be encouraged to report bites to the health department. The World Health Organization, Expert Committee on Rabies,[11] recommends the following control measures for rabies: (1) Registration, licensing and taxation of dogs, (2) elimination of stray animals, (3) restraint of dogs while a control campaign is under way, (4) mass vaccination of dogs, (5) provision of adequate facilities for diagnosis, (6) reduction in the number of wildlife species where these animals are a reservoir of the disease, and (7) a continual and energetic publicity campaign. Quarantine of imported animals has been an effective means of rabies control on islands.

TABLE 4. Anatomical Location of Reported Dog Bites Among Human Beings Pittsburgh, Pennsylvania, 1957

Anatomic Site	No. Dog Bites	% Total Bites
Lower extremities	739	42.8
Upper extremities	607	35.2
Head, face and neck	248	14.4
Trunk, excluding back	80	4.6
Back, including buttocks	51	3.0
TOTAL	1,725*	100.0

*A total of 1,725 separate wounds were reported as occurring among the 1,653 dog bite accidents studied.

Carithers[1] presented some interesting findings concerning the circumstances under which animal bites occurred. In many instances, a child and not the animal provoked the bite. He mentioned the importance of teaching children how to handle pets and stressed that children under 4 to 6 years of age should not own pets. Protective clothing for persons having a high risk to bites, such as postmen and delivery boys, may be a way of preventing dog bites. More basic epidemiologic information about the way in which bites occur may suggest other control measures.

Summary

1. The animal bite problem in 11 selected areas of the United States during 1956 and 1957 was studied. Los Angeles, Calif. listed the highest reported animal bite rate — 633.8 per 100,000 human population. The animal bite rate for the total population of these areas was 362 per 100,000 population. For the areas reporting Pasteur treatments, 731 or 2.16% of the animal bite victims received rabies treatment. There were 203 rabid animals found in six of the 11 areas studied, indicating that rabies is endemic throughout the United States.

2. During 1957 there were 2,713 animal bite accidents in Allegheny County, Penna., of which 2,411 were inflicted by dogs. The remaining 302 bites were caused by a variety of animals including cats, hamsters, squirrels, etc. Thus dog bites appeared to be the major problem. A total of 1,653 dog bites occurring in Pittsburgh, the largest city in the county, were studied in detail.

3. Dog bites most frequently involved children: 48.2% of all victims were less than ten years of age, and 77% of the dog bite patients were less than 20 years of age; 70% of the bites involved males and 30% involved females. Dog bites were most frequent among males in every age group.

4. There was a striking seasonal incidence of reported dog bites. Bites were infrequent during winter months and increased in incidence during March and April. Greatest frequency of bites was during summer months, from May to September. More bites were reported on weekends, particularly Saturday. Most bites (86%) occurred from 1:00 p.m. to 12:59 a.m.

5. The extremities of the victim were the anatomical sites of most of the bites; 42.8% on lower extremities and 35.2% on upper extremities. Bites about the head, face and neck constituted 14.4% of all those reported.

6. Most offending dogs (78%) had known owners; the remaining 22% were either strays or could not be traced to owners. Of the 1,653 reported dog bites, only 106 of the victims were bitten by their own dog. Evidently owners do not often report bites inflicted by their own dogs.

7. Measures for the control of pet animals and the prevention of their bites are discussed along with suggestions for additional studies on the epidemiology of animal bites.

REFERENCES

1. Carithers, H. A., Mammalian Bites of Children. *Am. Med. Assn. Jour. of Dis. of Children*, 95:150 (Feb.), 1958.

2. Steele, J. H., Infectious Diseases Common to Animals and Man. The Yearbook of Agriculture, The United States Department of Agriculture, Washington, D. C., 1956, p. 14.

3. Steele, J. H., Estimated Annual Toll of Rabies. *Jour. Am. Med. Assn.*, 149:176 (May), 1952.

4. Barclay, T. L., Dog Bites of the Face. *Brit. Jour. of Plastic Surgery*, 9:34 (April), 1956.

5. Ford, W. J. A., The Treatment of Dog Bites and the Rabies Problem. *Am. Jour. of Surgery*, 93:676 (April), 1957.

6. Vital Statistics of the United States, United States Department of Health Education and Welfare, National Office of Vital Statistics, Washington, D. C., 1955, vol. 2, p. 18.

7. United States Department of Agriculture, Animal Disease Eradication Branch Notice; Washington, D. C. (March), 1956.

8. Gordon, J. E., Epidemiology of Accidents. *Am. Jour. Pub. Health.*, 39:504 (April), 1949.

9. Parrish, H. M., The Nature of Poisonous Snakebites: Epidemiology, Diagnosis and Treatment. *Vet. Med.*, 53:197 (April), 1958.

10. Lepine, P., Rabies. Advances in the Control of Zoonoses, Geneva, World Health Organization, 1953, p. 215.

11. Expert Committee on Rabies, Third Report, World Health Organization Tech. Rep. Ser., No. 121, Geneva, 1957, p. 14.

THE CASE OF CARRE VIRUS INCLUSION BODIES

FRED B. OGILVIE, D.V.M.
Kansas City, Missouri

AS WHITNEY POINTS OUT (VETERINARY MEDICINE, March 1959) distemper in its broadest sense might signify any ailment of animals, including man. Any observer of not too many years in the field well remembers when distemper was practically everything in the way of illness occurring in the dog. Then we began to segregate this problem through research and experience. Up to now there are at least two well recognized entities — virus of Carre, and infectious canine hepatitis virus — known as distemper. Clinically most practitioners would agree with Whitney. For reasons he projects, plus other striking differentiations between Carre's virus and hard pad virus, there is another entity, *hard pad virus.*

Afflicted animals exhibit a temperature 102.5 to 104 F., (usually 103.2 to 103.8 F.) which is constant throughout the course of the infection, with no appreciable variation regardless of medication, thus indicating a viral infection. Peculiarly, any of the injectable antibiotics (in my experience) from penicillin through the broad spectrum group, not only have no effect on this condition, but seem to trigger the onset of encephalitis.

Should we ask ourselves another question? Are encephalitis, chorea, posterior or paralytic symtoms offshoots or variants of any or all of these accepted virus infections? Or are we dealing with a completely different group of purely neurotropic viruses established within an afflicted animal either because of the lowered defense mechanism with these viruses and bacterial and fungus secondary invaders, or due to the extremely high virulence of these neurotropic viruses which often affect the apparently healthy animal?

If the latter should be the case, it is much later than we think from a public health point of view. It is readily acknowledged that in most cases of encephalitis, necropsy and pathological examination reveal the presence of Carre virus inclusion bodies. Are they not also found in animals dead from other causes, and in some revealing no illness, such as the dog which is actively hyperimmune to the virus of Carre?

Is this then sufficient grounds to preclude intensive investigation of neurotropic virus infections as disease entities? Might not both be present?

The practitioner often takes this approach in trying to live with the all too few explanations available today. Professionally and public relations wise, the practitioner is sorely burdened in trying to explain to a well-informed client that the distemper complex is the source of his canine pet's neurotropic ailment.

There is no intent to imply that practitioners are not appreciative of the wonderful work which has been and is being done in research by and for our own and allied professions. Is it possible that we are on the threshold of much more which will be learned if sufficient funds are made available to pursue this field? Might not veterinary research in neurotropic virus infections save a possible variant of some of these viruses from plaguing the human race or shed light on some which are currently problems in the human race as well as giving veterinary practitioners better understanding of these and possibly some protection against them for clients?

Dr. William G. Magrane
President

A.A.H.A. Meets in

Dr. William K. Ridell
President-Elect

The 26th annual meeting of the American Animal Hospital Association at Colorado Springs, May 6-9, will be held at the new City Auditorium with various association functions at both the Broadmoor and Antlers hotels. Due to the crowded program, all sessions will begin promptly as scheduled, it was announced by Dr. Wayne Riser, executive secretary and vice president of the group.

Members, wives and guests are invited to a tour of Shamrock Ranch, where branding, cutting horse work, roping, vaccination and castration will be demonstrated. A side trip will take in the United States Air Force Academy. Tickets to all functions will be available at the registration desk. In addition to the above, a golf tournament has been scheduled for Tuesday, May 5.

Highlights of the program are presented below.

Dr. Wayne H. Riser
Vice President

Tuesday Morning, May 5

10:30 Tour Shamrock Ranch and U.S.A.F. Academy
Nine hole golf tournament, Broadmoor Golf Club Championship 18

Tuesday Afternoon, May 5

6:00 Executive Board Meeting, convention office, Broadmoor Hotel

Wednesday Morning, May 6

8:30 Pre-Convention Seminars and Workshops
Orthopedic Surgery
Neurologic Diseases
Clinical Tests
Step up Hospital Management

Dr. Ralph Ruggles
Treasurer

ets in Colorado Springs

Wednesday Afternoon, May 6

1:30 Membership Luncheon, Dining Room, Broadmoor
3:00 Business meeting, Little Theatre, Broadmoor
3:00 "Rush to the Rockies." Chuckwagon, mixer, square dance at the Garden of the Gods
6:00 Busses leave Broadmoor and Antlers for Chuckwagon dinner, mixer and square dance

Thursday Morning, May 7

9:30 Opening Session
11:00 Rationale of X-Ray Therapy in Small Animals — *Illustrated* — William D. Carlson
11:30 New Approach to Fixation of Elbow Fracture — *Illustrated* — Wade O. Brinker

Thursday Afternoon, May 7

1:30 Convulsions—Differential Diagnosis —John T. McGrath and Julius J. Fishler
2:00 Leave Administration Headaches to a Business Manager—John Micuda
2:25 Medical Approach to the Repair of the Acetabulum (*TV*) — Jacques Jenny
2:30 What A.K.C. Expects from the Veterinarian (*rostrum*) — John C. Neff
3:20 Simple Treatment for Conchal Hematoma (*TV*)—Frank R. Booth
3:30 Hospitalization Versus Out-Patient Treatment (*rostrum*) — E. Edgar Ruebush, moderator

Friday Morning, May 8

9:00 Nephrectomy in a Dog (*TV*)—Reginald A. Stocking
9:30 Urethrocolestomy in a Male Cat — Illustrated (*rostrum*)—Russell J. Beamer
10:00 Neurologic Examination of the Dog (*TV*)—John T. McGrath
10:15 Microbial Sensitivity Testing Illustrated (*rostrum*)—Lewis B. Huff
10:45 Do Your Bookkeeping with a Cash Register (*TV*)
11:15 New and Old Fracture Fixation—Jacques Jenny
12:00 Question and Answer Luncheon (Antlers Hotel) — C. Edwin Hofmann, moderator

Friday Afternoon, May 8

2:30 Cardiac Resuscitation (*TV*)
3:00 Mycotic Diseases in Practice (*TV*) —William J. Zontine
3:30 Tattooing for Solar Dermatitis (Collie Nose) (*TV*)—Glenn A. Severin
3:45 How Would You "Fix" This One? (Radiographs of fractures may be submitted for discussion) (*TV*)—Kenneth W. Smith, moderator
7:30 Banquet (Dress Optional) Grand Ballroom, Broadmoor

Saturday Morning, May 9

9:00 Zoo Practice is Interesting (*TV*)—Arthur C. Herzberger
9:30 Radiographic Diagnosis of Spirocerca lupi — Illustrated (*rostrum*)—Newton B. Tennille
10:00 Urinary Infections in Practice (*TV*) Jacob E. Mosier
11:00 Better Radiographs — Attention to Contrast Media and Positioning (*TV*)—William D. Carlson
11:15 Changes in the Genitalia of the Middle-Aged Bitch (*rostrum*) — Alfred G. Schiller
12:00 Otitis Externa Corrected by Removal of the Ear Canal — Illustrated (*TV*)—Charles O. Seward

Here each month are published ideas, suggestions and comments picked up by VM reporters at veterinary meetings.

Small Animal Clinic

Sterilization of Gloves

Our approximate cost for cleansing, drying, powdering and wrapping rubber gloves for sterilization is around 15 to 18 cents. We have lately been acquiring gloves wrapped and ready for sterilization at a cost of 25 cents per pair. These are called disposable gloves, and we use them over and over.

Rubber gloves last longer and are more efficient if one remembers, in the words of Dorothy Errera, speaking at the 1956 A.A.-H.A. meeting:

1. To sterilize gloves; 250 F. for at least 15 minutes. Less heat is inefficient. More heat than 250 F. causes deterioration of rubber and the gloves do not last as long.
2. After autoclaving, it is best to put gloves on a shelf and stand on edge for 48 hours. Gloves so handled regain some of their elasticity and strength lost by autoclaving.
3. Most paper glove holders are not efficient.—*Charles E. Bild, D.V.M.*

Plumbism in Dogs

Dogs — especially puppies, and some of the other small carnivorous beasts are inveterate chewers of substances not classed as food. In their chewing of these things, they necessarily dissolve or place in suspension some of the ingredients in their saliva. These are swallowed. Green paint, green wall paper and other things comparably colored are arsenic containers. Linoleum has in it, as a filler, white lead, a lead carbonate.

Linoleum is not infrequently used for flooring in dog houses. As a result it is often chewed. Plumbism may result. It is easy to overlook the condition clinically, and treatment is not successful in advanced cases.

Bird Practice Pointer

To encourage singing in a canary or stop laying females, mix dextrose, 9 gm., methyltestosterone, 1/100 grain, and divide into 12 powders. Feed one powder daily mixed in 1/4 teaspoon of hard boiled egg yolk.

It is well to remember that volatile anesthetics are not reliable due to the respiratory system of avia. Tincture of iodine applied over extensive areas of the body might prove toxic to many birds. Procaine penicillin by injection may prove dangerous due to procaine absorption. Cathartics used in cases of diarrhea may increase the loss of body fluids and make the condition worse.—*R. M. Stone D.V.M., Michigan State University Veterinary Conference.*

Canine Distemper Culture

It has been reported by Rockborn of Sweden that the virus of canine distemper can be propagated in cultures of canine kidney with production of cytopathogenic effects and multinucleated cells. This work has been recently confirmed by Vantis, University of Glasgow.

The editor of VETERINARY MEDICINE had the privilege of visiting Doctor Rockborn this past summer in his laboratories at the

Swedish Veterinary College in Stockholm. His work is carefully done and the validity of this achievement cannot be questioned. It was gratifying to see that great research developments can still be achieved by a single dedicated worker in humble but adequate facilities.

The name Rockborn will certainly be recorded in the literature, since his tissue culture findings advance the knowledge and control of canine distemper. I shall long remember my visit with the young dedicated scientist of Sweden who accomplished through perseverance, hard work and keen observation what well staffed laboratories of the world had pursued many years.—*C. M. Cooper, D.V.M.*

Immunity to Distemper in Dogs

The test in eggs for distemper-neutralizing antibodies in dog serums was shown to be specific and accurate if the amount of the virus used in the test was controlled. Virus neutralization compared with test by virulent virus showed that all 420 dogs studied that were immune to distemper had neutralizing antibodies, whether the immunity resulted from infection or was acquired from the mother either by *in utero* transfer or through the intake of colostrum.

Practically all dogs have neutralizing antibodies nine days after injection with virulent virus and by the 12th day in sufficient titer to protect the dog. By the 30th day maximum titers are usually reached. Thereafter titers remained with relatively little decrease over a period of two years which was the longest time tested.

Most puppies one week of age or older responded to virulent distemper virus either by dying or by developing immunity if they showed a serum titer of less than 20. They were usually immune if their titers were higher than 30. The serum titer of a puppy was found to be proportional to the serum titer of its mother; in a puppy before nursing it was approximately 3% of the colostral titer, which reflected the mother's serum titer. Although the mother's serum titer persisted, the colostral titer fell markedly two days after whelping and nursing began, and the serum titer acquired by the progeny disappeared gradually, with higher titers persisting longer than lower ones. On the basis of the mother's serum titer, therefore, it became possible to predict the age at which antibodies in a puppy would no longer protect and the puppies would become susceptible and could be immunized. Since antibody titers in dogs were not increased appreciably by further exposure to virus, a nomograph was constructed which permits, on the basis of the serum titer shown by a pregnant dog, a prediction of the age at which puppies as yet unborn could be immunized and thereby make available maximum protection from vaccine by vaccination at the earliest possible age.—*James H. Gillespie, V.M.D., Veterinary Virus Research Institute, Cornell University, Ithaca, New York.*

Paralysis in a Kitten

A diagnosis of osteogenesis imperfecta in a kitten confirmed by autopsy was reported by Dr. Deane Chamberlain in the January 1959 issue of the *Maine Veterinarian.*

The kitten was first hospitalized with partial paralysis of pelvic limbs at three months of age. Vitamins, minerals and good rations were administered for ten days, and the animal was discharged. This attack was supposedly caused by rough play with an older family cat.

One month after the first attack, the kitten was again admitted after being unable to stand. This attack was initiated when a child playfully threw a piece of clothing at the cat. Without being hit, the kitten attempted to run. At this time, severe pain was manifested and partial paralysis resulted. Hospitalization and *x*-rays revealed the case to be incurable. Diagnosis was confirmed upon autopsy.

On Surgery Preparation

The efficiency of routine preparation for surgery, such as skin cleansing, draping and absolute toweling in of an incision often leaves much to be desired. However, this routine can be made excellent with the use

of a new clear plastic that adheres to the cleansed operative area. Incision is made through the plastic. This material is called Vi Drape; the adherent is called Vi Hesive, and may be obtained from regular surgical manufacturer supply outlets. The plastic sheet comes in rolls of 24 x 42 in. and the spray comes in 8 oz. cans. The plastic sheets can be cut in any desired size, wrapped for autoclaving and storage.

There are many operations on the dog or cat, where a 100% efficient draping of the area would have as much to do with a clean operation as the use of rubber gloves. For instance, oophorectomy in a Persian cat, surgery involving the stifle joint, neoplasm in parotid area, castration in long haired animal, and perineal hernia.

Open reduction of radius and ulna of a five pound dog can be executed efficiently with the use of plastic drapes. Efficient sterile draping of the area and incision with the use of this new plastic is a simple procedure.

In surgical problems such as cesarean section, the entire draped area of the surgical site often becomes wet. Contamination from the skin upwards is a possibility that is certainly not desirable. This new plastic draping material has been a worth while addition to our surgical routine.

We use this plastic routinely in all operative cases. The cost for most operations is less than 20 cents.—*Charles E. Bild, D.V.M.*

Castration of Cats

Castration of cats can best be performed when the animal is five to six months of age, according to Dr. Douglas H. McKelvie, writing in the January 1959 issue of *Rocky Mountain Veterinarian*. Except in cases of persistent monorchidism, testicles are descended and well developed at this age.

Two reasons for earlier castration may be given:

1. The animal has not yet attained the desire to roam at this early age. Castration at this time seems to inhibit this instinct to a much greater degree than when the animal is castrated after the first year or two of life. Also animals that have been roaming for some time often never break the habit even when castrated.

2. The typical odor of male cats as a rule does not appear until around eight months of age. One can be fairly certain of eliminating this odor with castration but the odor does persist in some male cats that have been castrated at a later age. So far, we have never seen a male cat that has been castrated at the earlier age develop this odor later in life.

External Parasites Of Pet Birds

External parasites are usually a big problem when encountered in a breeding establishment or when a new bird is brought into the house. The red mite is the biggest offender. Diagnosis is based on physical examination of feathers with a magnifying glass, or examination of a white sheet that has been draped over the cage at night.

Management consists of washing cages with a strong solution of Lysol and hot water. Several methods of treatment may be used. A 2 or 3% Pyrethrum in Talc may be applied daily for seven days and then once a week thereafter. A 25% powder may be placed on floor of the cage. Lindane solution may be used on perches as recommended on the bottle. A 10% kerosene spray in light mineral oil is also used.—*R. M. Stone D.V.M., Michigan State University Veterinary Conference.*

Leased Beast Boom

More and more animals, ranging from tame pussy cats to fierce-looking lions, are being employed as performers in the entertainment world, and as models in ads.

New York's Animal Talent Scouts, a big owner and supplier of these non-human posers and performers, reports it billed about $100,000 in business in 1958, an increase of 25% from the preceding year. Another animal rental concern grossed $101,174 in rental fees last year, up from $65,914 in 1957, and its business in recent months has been running 20% to 25% ahead of a year ago.

Animal renters credit the boom in leased beasts to increased efforts by showmen and ad agencies to add more realism.

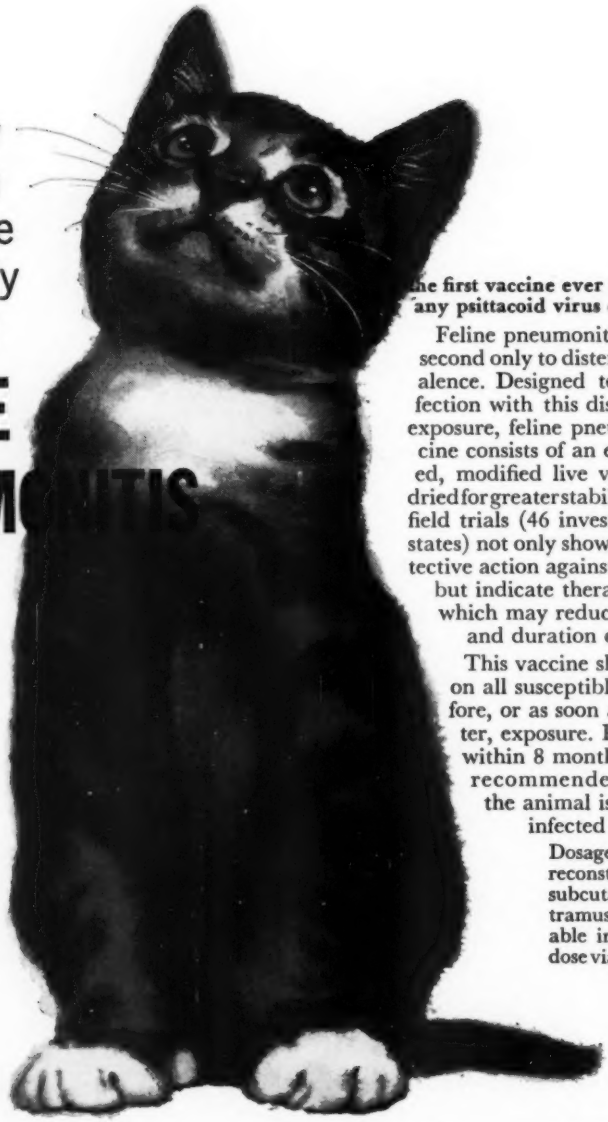
ANOTHER NEW PRODUCT BY FROMM

Hepoid TC

AVAILABLE IN 10-DOSE AND 1-DOSE PACKAGES.
SOLD TO GRADUATE VETERINARIANS ONLY.
FROMM LABORATORIES, INC. GRAFTON, WIS., U. S. A.

now you can vaccinate effectively against

FELINE PNEUMONITIS



The first vaccine ever developed for any psittacoid virus disease

Feline pneumonitis is a disease second only to distemper in prevalence. Designed to prevent infection with this disease prior to exposure, feline pneumonitis vaccine consists of an egg-propagated, modified live virus, vacuum dried for greater stability. Extensive field trials (46 investigators in 13 states) not only show a highly protective action against pneumonitis but indicate therapeutic effects which may reduce the severity and duration of the disease.

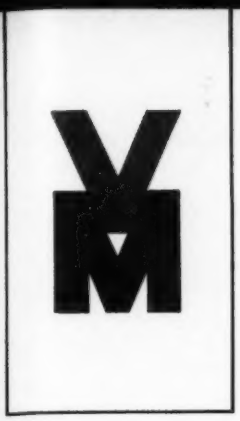
This vaccine should be used on all susceptible animals before, or as soon as possible after, exposure. Revaccination within 8 months to a year is recommended whenever the animal is placed in an infected environment.

Dosage is 1 cc. of the reconstituted vaccine, subcutaneously or intramuscularly. Available in 1 or 5 single dose vials with diluent.

(Bio. 804)

extensive field trials show 86% of cats protected by vaccine				therapeutic effects also indicated			
No. of cats	Status	No. of cats remaining well	No. of cats developing symptoms	No. of cats	Status	No. of cats recovering in 5 days	No. of cats remaining sick after 5 days
1462	vaccinated	1254 (86%)	208 (14%)	611	treated	449 (74%)	162 (26%)
809	controls	483 (60%)	326 (40%)	379	controls	66 (17%)	313 (83%)
field use in noninfected cats				field use in infected cats			

PITMAN-MOORE COMPANY Division, **ALLIED LABORATORIES, INC.**, Indianapolis, Indiana



The recent passage of the Self-Employed Individuals' Retirement Act of 1959 by the House of Representatives has alerted veterinarians to possible tax advantages previously unavailable. In this report, and the question and answer section that follows, salient facts dealing with the bill are presented.

Retirement Act of 1959

HAROLD J. ASHE

Beaumont, California

AGAIN THIS YEAR a bill (H. R. 10) has been introduced in the House of Representatives "to encourage the establishment of voluntary pension plans by self-employed individuals." It has been given the title: "Self-Employed Individuals' Retirement Act of 1959."

In 1958 a similar bill was introduced. It had the endorsement of many business, trade and professional organizations. It passed the House but died in the Senate during the last-minute rush to adjourn. At that time it had the blessing of President Eisenhower. Its chance of passage this year is considered excellent. The House Ways and Means Committee endorsed it and the measure passed in the House.

Self-Employed Taxpayers

Purpose of the Act is to permit self-employed taxpayers to deduct certain funds deposited in approved retirement plans in calculating their income tax on self-employment earnings. Such income tax savings, made at that time, are intended to encourage planned savings programs for retirement. Because of the impact of income taxes, most self-employed individuals have difficulty setting aside sufficient funds for comfortable retirement. H. R. 10, if enacted, would put the self-employed individual on essentially the same footing as employees covered by pension plans, so far as income taxation is concerned.

Whether sponsors of H. R. 10 succeed in 1959 in effecting its passage depends in large measure on the amount of grass-roots support it gets from self-employed individuals who would benefit. The most effective support will come from individual veterinarians and other self-employed individuals, petitioning their own elected legislators to vote for the measure. Moreover, past support is largely forgotten by lawmakers. It is current support, here and now, that will count and may turn the balance in favor of passage.

Self-employed individuals, including veterinarians, who would welcome passage of the bill should write their United States Senators and Congressmen, voicing approval. Investment: 15 minutes time, 12 cents postage. The bill should be identified both by number and title, thus: H. R. 10, Self-Employed Individuals' Retirement Act of 1959.

The New Measure

The 1959 bill differs from that of 1958 in both the yearly and lifetime maximum

amounts of self-employment income which is deductible from income tax returns. In 1958 the annual maximum was 10% or $5,000, whichever was the lesser amount. In 1959 the bill reads 10% or $2,500, whichever is the lesser figure. In 1958 the lifetime maximum was $100,000. It is now $50,000.

As in the earlier bill, the 1959 bill permits individuals older than 50 to step up annual amounts which can be paid into "a restricted retirement fund" or for "a restricted retirement policy." For each year in excess of 50, determined as of January 1, 1959, the annual limit may be increased by one-tenth. Thus, a taxpayer, age 55, would be permitted to increase his maximum permissible annual retirement investment by 50%, subject only to the lifetime maximum. This is designed as an offset to the fewer years remaining to such individuals in which to build up a retirement fund or annuity.

The Act defines retirement deposits as money payments to a restricted retirement fund or to a domestic life insurance company as premiums under a restricted retirement policy issued on the life of a taxpayer.

A taxpayer's interest in a trust fund is nonassignable. He may, however, designate one or more beneficiaries in event of his death.

Before a taxpayer reaches age 70, his interest in the trust fund must either be distributed or applied to the purchase of an annuity. As an alternative, his interest in the fund may be distributed before he attains age 80. This distribution must begin in the taxable year in which he reaches 70. The annual rate of distribution each year must not be less than 10% of the value of his interest in the fund.

If a taxpayer dies before 70, his entire interest in the trust must, within five years after date of death, be distributed or be applied to the purchase of an immediate annuity for his surviving spouse.

Income Tax Savings

If enacted, taxpayers who elect to set up retirement funds may expect to make substantial overall income tax savings during the years such funds are excluded in calculating income taxes. These funds will be excluded from taxable earnings usually in those years taxpayers experience their highest earnings. The funds so set aside for retirement otherwise would be fully taxable at the highest applicable rate because such funds come off the top layer of taxable income.

Consider a veterinarian with a moderate professional income who avails himself of H. R. 10 upon its enactment. Net earnings are around $7,000. He invests $700 a year, his maximum, in a retirement fund, doing so for 20 years. He is in the 20% tax bracket. His annual income tax saving is $140, and his lifetime saving is $2,800. In fact, a substantial part of his retirement investment fund is represented by his tax reductions over the years.

Self-Employed Veterinarians and Retirement

For at least a quarter of a century, practicing veterinarians have been subjected to a federal tax structure that does not give them the same break on pension contributions enjoyed by, say, members of a commercial firm's retirement program. Recently the House of Representatives gave the nod to the Keogh-Simpson bill, a measure designed to eliminate some of the existing inequities. Here the editors of VETERINARY MEDICINE *have compiled some of the salient points in question with reference to self-employed veterinarians and retirement.*

Q. What is the purpose of the Keogh-Simpson Bill?

A. These bills (H.R. 10 and H.R. 9) would permit a self-employed person to defer income tax each year on a portion of his own income to provide for his retirement. This part of income would be paid in voluntarily to a restricted retirement fund, or as premiums on an insurance policy with retirement features. Types of systems available would be safe and approved.

Q. Is this politically a partisan measure?

A. No, it is not! It is co-sponsored by members of each party. In the 85th Congress, this bill was supported on the floor of the House by the leadership of both parties; it was passed almost unanimously by the votes of both parties. However, in the closing days of the session, the Senate failed to take action on this bill.

Q. Why is this bill necessary? Are any organizations behind it?

A. High taxes and inflated living costs make it difficult for the self-employed veterinarian to set aside money for retirement, in the absence of tax deferments which are already available to corporation employees. In many instances, qualified young men are going on a payroll rather than striking out for themselves. The Keogh-Simpson Bill would help counteract this shift away from individual enterprise. More than thirty national organizations representing self-employed persons are supporting the bill.

Q. How much could you set aside under Keogh-Simpson?

A. You could set aside annually up to $2,500 or 10% of self-employment income, whichever is less, but not more than a total of $50,000 during your lifetime.

An individual who has reached age 50 before the effective date is allowed to deduct an additional amount to help him build up an adequate interest in the fund or obtain more than a token annuity. Persons over 60 could defer taxes on a larger amount.

Q. How can you invest in order to qualify?

A. Under the measure, you may claim a deduction for an investment in: (1) a restricted retirement policy (life, endowment, or annuity policy, but deductions are not allowed for costs allocable to the portion for life insurance protection); or (2) a restricted retirement fund trusteed with a bank.

Q. Are many people penalized by our present tax regulations?

A. Yes, a surprisingly large number of people — about 10,000,000. Affected are veterinarians, physicians, dentists, barbers, funeral directors, osteopathic physicians, farmers, lawyers, chiropractors, optometrists, beauty shop owners, accountants, architects, engineers, industrial designers, chemists, ministers, many types of salesmen, writers, artists, actors, musicians, dancers, real estate and insurance brokers, independent filling station owners, investment counselors, taxicab operators, and a host of other independent enterprisers. Generally speaking, anyone who is subject to the self-employment tax for social security purposes, including veterinarians, would be eligible.

Q. Why isn't Social Security sufficient?

A. The Old-Age and Survivors Insurance program is intended to provide the minimum benefits necessary for a subsistence standard of living. The Keogh-Simpson Bill is intended to provide a second layer of income for retirement or survivorship purposes to complement Old-Age and Survivors Insurance benefits. This complement would raise the living standard of the recipient from the subsistence level to one that more nearly approximates that of his productive years.

Q. What action should you take?

A. Write to your United States Senators today! Urge them to support the measure. Your future rests with them. Encourage your self-employed friends to express themselves on this legislation.

SPECIAL REPORT

Results of Sensitivity Tests in 1958

MARGARET SCHLICHTING, B.A.

Veterinary Diagnostic Laboratories
New York, New York

THE RESULTS OF 100 TESTS were selected to give an annual report on the most effective antibiotics for the most frequent infections encountered among small animals. Similar reports have been published annually since 1955.

Fifty ear discharge specimens, 20 fecal swabs, ten blood samples and 20 miscellaneous cultures of skin, throat, urine and other material were used in the survey. Cultures were first grown in tryptose phosphate broth for 12 hours at 37 C., plated out on tripticase soy agar, ten antibiotic discs added, and then incubated another 12 hours before the inhibition zones were recorded. Only the most effective drugs are listed in the summaries.

Among the ear swab cultures, Gram-negative rod infections predominated, and these were most sensitive to Combiotic (penicillin and streptomycin). Gram-positive cocci were the next most frequent cultures grown followed by Gram-positive rods, while Gram-negative cocci occurred in fewer instances.

The most effective drugs and the number of times each was the antibiotic of choice were as follows:

Drug	Times Used
Penicillin and Streptomycin	12
Chloromycetin	11
Penicillin	6
Furadantin	5
Terramycin	3
Streptomycin	2
Erythromycin	2
Tetracycline	2
Penicillin and Chloromycetin	2
Neomycin	1
Chloromycetin and Streptomycin	1
Furacin	1

Cultures of fecal material produced a variety of bacteria predominantly made up of Gram-negative rods, Gram-positive rods, and Gram-negative cocci. Chloromycetin was the most effective drug in the inhibition of these cultures. The order of the various drugs' effectiveness for this group was:

Drug	Times Used
Chloromycetin	10
Furadantin	3
Tetracycline	3
Furacin	2
Penicillin and Streptomycin	1
Neomycin	1

Among the ten blood samples, the various types of bacteria were found to occur about an equal number of times.

Penicillin and streptomycin was most effective in four of these cases while Chloromycetin, Furadantin, Terramycin, Streptomycin, Erythromycin and Gantrisin were the choice in one instance each.

The 20 miscellaneous samples included material from two cases of osteomyelitis, two throat swabs, six skin infections, two mouth swabs, six urinary infections, one vaginal and one anal swab, and one breast discharge.

Gram-positive cocci were found most frequently, followed by Gram-negative rods. The effective antibiotics and the number of

times they were the drug of choice was as follows:

Drug	Times Used
Penicillin and Streptomycin	5
Chloromycetin	3
Furadantin	3
Penicillin and Chloromycetin	2
Penicillin	2
Gantrisin	1
Terramycin	1
Erythromycin	1
Chloromycetin and Streptomycin	1
Penicillin and Terramycin	1

The relative percentage of effectiveness for the one hundred samples may be noted.

Drug	% Effectiveness
Chloromycetin	25
Penicillin and Streptomycin	22
Furadantin	12
Penicillin	8
Tetracycline	5
Terramycin	5
Penicillin and Chloromycetin	4
Streptomycin	4
Neomycin	3
Gantrisin	3
Penicillin and Terramycin	3
Furacin	3
Chloromycetin and Streptomycin	2
Neomycin	2

New Uses for Feed Additive

Two new uses for its chemobiotic feed additive, Dynafac Premix (Armour) have been announced recently.

The new uses are (1) as an aid in minimizing the occurrence of feedlot bloat due to high consumption of concentrates, and (2) as an aid in minimizing the occurrence of feedlot founder due to high consumption of concentrates.

College and field demonstrations, Armour said, have consistently shown elimination of bloat and founder where Dynafac Premix was included in the ration.

The company also explained that the Food and Drug Administration has ruled that the name "dynafac" is now the generic term for the active ingredient, rather than the "trimethyl octadecyl and hexadecyl ammonium stearates" previously used for feed tag declaration. Therefore, "Dynafac Premix" is now the product name and "dynafac" is the name of the active ingredient for use on the feed tag.

"Dynafac" is no longer a registered trademark, the company said; it is the official "common or usual term" for the active ingredient.

According to Armour, dosages will still be stated in terms of Dynafac Premix — 2 gm. per head per day for feeder cattle.

Clinical Use of a New Iodophore

A new iodophore, a complex of elemental iodine and quaternary ammonium base known as Ruson has been made available in human medicine recently. The latter is a strong detergent and has germicidal activity superior to that possessed by benzalkonium chloride (Zephiran). The combination is known as Virac.

According to Dr. John E. Harris, *et al.*, writing in the *American Medical Association Archives of Ophthalmology* (60:206, 1958):

1. In dilutions with considerable germicidal potency, Virac was not toxic to the human eye even when applied to an eye with disturbed corneal epithelium.

2. It appears to be an efficient surgical preparation. Its use around the eye prior to surgery caused no untoward local or other reactions.

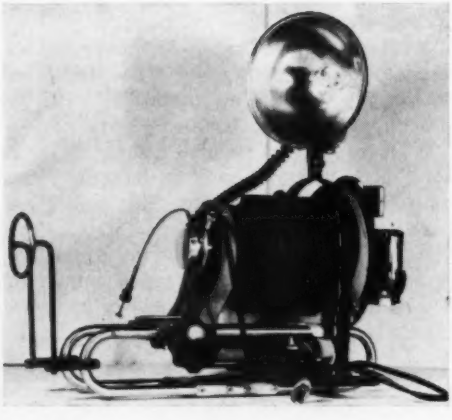
3. It appears to be an excellent irrigant for the conjunctival sac and lacrimal passages, being of low toxicity while possessing high germicidal activity.

4. Virac is not a cure-all for ocular infections. It does not cure herpes simplex of the cornea but may be of value in its treatment.

Colored PHOTOGRAPHY *of* CATARACTOUS LENS

GEORGE E. PARK, M.S., M.D., W. C. DOLOWY, M.S., D.V.M. and A. C. IVY, Ph.D., M.D.

Department of Clinical Science and the Animal Hospital
University of Illinois
Chicago, Illinois



IN A RECENT ARTICLE[1] the authors presented evidence showing that the opacity of the canine lens, which is referred to as cataract, may be cleared to a therapeutically significant extent. During that study the changes in the opaque lens were photographed in color by a special camera made for the purpose by one of the writers (G.E.P.).

In this article the camera will be described, and photographs which illustrate the three general types of clearing of the opaque lens will be presented. In addition, the abstracts of the clinical history of eight dogs are provided. These abstracts were cited along with a series of colored photographs of the changes in the lens of each dog at the meeting of the Illinois Veterinary Association on February 16, 1959. The method for the production and the chemistry of the therapeutic product used were provided in the previous article.

Photography

The Camera. A Flurolite enlarger bellows was fitted onto a Flurolite camera bed. (If desired, this camera bed can then be fitted to a tripod for rigidity.) A 101 mm. Kodak ektar lens in a synchro rapid shutter was used. An electronic flash portable unit was also utilized. A Kodak Flurolite camera back adapter "A," which held a Kodak 35 mm. film adapter "A," model 2, was attached to the back of the Flurolite bellows. This provided for ground glass focusing and the use in sequence of a set of 35 mm. films. Focusing was accomplished by simply racking the lens board backward or forward. For photographing the eye at a set distance, it was necessary to design a metal frame to hold the object at a desired distance at all times. This device increased the yield of suitable photographs of the lens in those dogs which moved considerably. This equipment is no longer manufactured by Eastman Kodak Company but other equipment designed for similar purposes is now available from Eastman.

Photographs. Some dogs photographed well. Others moved their head and eyes frequently and repeated photographs had to be made. The dogs were not anesthetized.

Reprints of the complete unedited manuscript of this and the preceding article are available to those who write the authors.

Anesthesia would have been desirable, but we did not desire to submit them to any complication which might follow. The pupil was dilated with neosynephrin before photography. The synchro electronic flash unit was very helpful because it prevented contraction of the pupil when the effect of the neosynephrin was not complete.

Photographs of the lens were usually made on each dog during each monthly visit.

Results

The kind of photographs obtained is illustrated in Plate 1. The photographs for the plate were selected to illustrate the three general types of clearing of the opaque lens which was observed in 26 dogs.

The clinical abstracts of eight of the 26 dogs, along with the colored photographs of four of the eight showing progressive clearing of the opaque lens, are presented to illustrate in a general way the clinical results obtained.

Dog 1. The ocular photographs in color of dog 1 (Duke I) are shown because only a small peripheral clearing of the opacity (25%) was observed in the left lens of this dog during a period of treatment of about two years, whereas an early cataract in the right eye cleared in three months. The photographs of the left eye serve as a long-time control for those dogs which showed a more rapid progressive disappearance of the cataracts.

Dog 1 was a ten year old male mixed Shepherd weighing about 100 lb. The cataract in the left eye was one year old, mature and diffusely opaque, and no light reflex was obtained from the fundus by ophthalmoscopic examination. The cataract in the right eye was six months old, involved about 50% of the lens and a faint green pigment reflex could be obtained from the fundus. The left eye was totally blind, the right partially blind. There was no history of distemper, diabetes, rickets, or convulsions. When quite young he received a dog bite on the head.

The dog was given 0.02 mg. of extract 1 intramuscularly every two weeks, the first injection being made on June 26, 1956. The right lens showed definite clearing two months later, August 21, 1956. The clearing of the opacity of the lens continued and had practically disappeared at three months, or by September 18, 1956. At this time the lens in the left eye had shown no clearing, but a slight clearing of the periphery of the lens was evident five months after the start of the therapy.

No further change had occurred in this lens one year after the start of the treatment, at which time the dose of extract 1 was doubled to 0.04 mg. every two weeks. Between February and May, 1958, or 22 months after the start of the treatment and when we were about to discontinue treatment, the lens started to clear at the periphery; and, by May 2, 1958, the periphery of the lens had become transparent and blood vessels could be seen in the fundus by viewing through the periphery of the lens. The dog, being over 12 years of age, became weak, and treatment was stopped in August, 1958.

Later, he developed a hyperthermia and died at about 13 years of age.

Dog 9. The ocular photographs in color of dog 9 ("Pal") are also presented because the dog showed only slight clearing at the periphery of the lens of both eyes during 4.5 months of treatment.

Dog 9 was a 12 year old Boston Terrier weighing 12 lb. A mature diffusely opaque cataract was present in both eyes. None of the fundus could be seen in either eye by ophthalmoscopic examination. The cataract was first known to have been present three weeks earlier but the dog had been bumping into things for some time. The dog now is totally blind. There was no history of distemper, diabetes, convulsions, rickets, or accidents. The urine was negative for sugar.

The dog was given 0.02 mg. of extract 1 deep subcutaneously or intramuscularly every two weeks, the first injection being given on August 2, 1957. The lens in the left eye showed some evidence of clearing at the periphery one month later; the lens of the right eye, two months later. By January, 1958, or 4.5 months after the start of treatment, the clearing was slight, and the owner discontinued bringing the dog for treatment, because he believed that the progress the dog had made during the past 4.5 months had been too small to warrant further trips to the small animal clinic.

Dog 2. The ocular photographs of dog 2 ("Tipper") are presented because they show from 50 to 85% clearing of the lenses with return of practically normal functional vision.

Dog 2 was a 3.5 year old Wire Haired Terrier weighing 20 lb. In 1954 the dog was in an accident which was followed by convulsions which recurred occasionally until the present date about two years later, or July 10, 1956. However, there was no evidence of injury to the eyes, but injury to the head had occurred. On July 10, 1956, both eyes had a mature diffusely opaque cataract. The one in the right eye had been observed first in November 1955, or seven months previously. The one in the left eye had been discovered a few months later, when the eye was examined because the dog started to "bump into things." There was no history of distemper, diabetes, or rickets. The urine was negative for sugar.

On July 10, 1956, the dog was started on 0.02 mg. of extract 1 intramuscularly every two weeks. Six weeks later the lenses in both eyes showed some clearing in a portion of the periphery of the cataract. Nine weeks after the start of treatment the green fundus reflex was evident in the left eye. It did not become evident in the right eye until three months after the start of treatment, or January 8, 1957. The functional vision was definitely present in October of 1956, or three months after the start of treatment. The lens of the left eye showed about 85% clearing and the right eye about 50% at seven months after the start of treatment.

On the return of functional vision the dog grew more and more aggressive and bit a child. After the usual observation period it was subjected to euthanasia on December 9, 1957, the functional vision still appearing to be normal.

Dog 3. The ocular photographs in color of dog 3 ("Penny") are presented because they show approximately 90% clearing of the opacity in both eyes, with the return of practically normal vision.

Dog 3 was a three year old female Beagle weighing 30 lb. The opacity of the eyes was noticed about August 1, 1956, when the dog had difficulty getting around the house. On August 21, 1956, the dog appeared to be totally blind. Both eyes showed a mature diffusely opaque cataract. The green fundus reflex could not be seen in either eye on ophthalmoscopic examination. There was no history of distemper, diabetes, rickets, convulsions, or accident. The urine was negative for sugar.

The dog was given 0.02 mg. of extract 1 intramuscularly every two weeks, the first injection being given on August 21, 1956. Some clearing of the lens was evident in the left eye one month later and in the right eye two months later. The green fundus reflex was present in both eyes three months after the start of the treatment November 11, 1956. By January 8, 1957, both lenses were about 90% clear. The vision was much improved three months after treatment and practically normal on February 8, 1957, or five months after the start of treatment. By May, 1957, or eight months after the start of treatment the right eye had cleared so completely that the only opacity remaining was a small golden colored body or nucleus located at the center of the lens. By January 1959, this "body" had almost disappeared.

Five months later, or on November 12, 1957, the left eye of the dog was injured in an accident and the cornea became opaque. On January 1, 1958, the tension in the eye was above normal. The local veterinarian diagnosed "glaucoma." The owner stopped treatment for cataract after January 1, 1958, because the right eye was clear. In January 1959, one year later, the vision in the right eye has decreased a little, according to the owner, who in addition has reported that the dog "can still see enough to get around fairly well." The left eye was removed surgically January 20, 1959. The dog will be re-examined and treatment with extract 1 may be started again.

Dog 5. The ocular photographs in color of Dog 5 ("Cindy I") are presented because they show approximately 90% clearing in the right eye and 80% in the left eye with return of almost normal vision.

Dog 5 was a four year old Cocker Spaniel weighing 25 lb. The opacity of the left lens was noticed three months prior to the first examination in June 1956; that in the right lens in August 1956. The dog had been "bumping into things." On September 18, 1956, the dog was totally blind and had bilateral mature diffusely opaque cataract. Neither fundus was visible by ophthalmoscopic examination. There was no history of distemper, diabetes, rickets, convulsions, or accidents. The urine was negative for sugar.

The dog was given 0.02 mg. of extract 1 intramuscularly every two weeks, the first injection being given on September 18, 1956. During the first month after the start of therapy the previously diffusely opaque lenses developed striations or lines of decreased density. The pigment in the fundus was evident in the left eye two months after the first injection November 13, 1956, and in the right eye at 4.5 months after the first injection February 4, 1957. The opacity in the left eye was roughly 80% cleared by 4.5 months after the start of treatment and about 90% in the right eye seven months May 28, 1957 after treatment.

In November 1957, glaucoma started to develop in the left eye, and a corneal opacity appeared. By March 1958 the glaucoma had continued to increase. Since then treatment has been given about every two months. Since reducing the frequency of the treatment, the glaucoma has ceased progressing. In January 1959, it was about as it was in March 1958, and the corneal opacity has cleared considerably. The functional vision of the dog has remained the same.

Dog 11. The ocular photographs in color of dog 11 ("Cinder") are shown because they show progressive clearing of the bilateral cataracts with return of practically normal vision.

Dog 11 was a seven year old female "Spaniel," weighing 18 lb. The opacity in lenses was noticed about six months ago, because the dog bumped into things and appeared to be totally blind. There was no history of distemper, diabetes, rickets, convulsions, or an accident. The opacity in the left eye was a mature diffusely opaque cataract and no part of the fundus could be seen. The opacity in the right eye was diffuse except for a few fine striations. The green pigment of the fundus could be seen faintly, but no blood vessels could be seen by ophthalmoscopic examination.

The dog was given 0.03 mg. of extract 1 intramuscularly on October 16, 1957, and every two weeks thereafter. The lens in the right eye showed some definite clearing two months later December 10, 1957. Clearing was not definite in the left eye until five months after the start of the treatment or until March 1958. The green fundus reflex in the right eye was more clear one month after the start of treatment. This reflex became visible along with the blood vessels one year later or in October 1958. The functional vision of the dog was practically normal 11 months after the start of treatment.

Dog 20. The ocular photographs in color of dog 20 ("Whiskers") are presented because the dog's cataracts responded to extract 1 quite rapidly; the treatment on the dog was started relatively recently, and the amount of material administered was relatively small.

Dog 20, a 5.5 year old male was first seen by us on March 4, 1958, because three months previously it started to bump into things in the house, and appeared to be totally blind. A cataract in the right eye had been diagnosed by a veterinarian eight months previously and the one in the left eye about three months ago. There was no history of distemper, diabetes, rickets, convulsions, or accident. An examination of the eyes showed the presence of bilateral mature diffusely opaque cataracts and the retina could not be seen on ophthalmoscopic examination.

On March 4, 1958, the dog received 0.01 mg. of extract 1 intramuscularly. He received a similar dose on April 6 and 27; on June 26, 0.02 mg., and then none until August 6 and 20 when the 0.02 mg. dose was repeated. He was then not treated for two months. On November 11, 1958, 6.5 months after the start of treatment, the right lens had cleared enough to permit inspection of the retinal vessels and the left lens enough to see the green pigment in the fundus. The vision had improved functionally so that the dog could see and follow the movement of a hand at a distance of two or three feet, could play more actively, and could see objects in bright light, but only with some difficulty in dim light. The dog has been treated more intensively since November 1958.

Dog 12. The ocular photographs in color of dog 12 ("Sport") are presented because this dog, a Champion Bird Dog, recovered functional vision more quickly than any other dog we have treated.

Dog 12 was a four year old Pointer weighing 50 lb. On September 1, 1957, the owner observed that the dog did not recognize him when he walked out of his house, unless he was "downwind" or spoke to the dog. The dog also ran into barbed wire and other

FIGURE 1

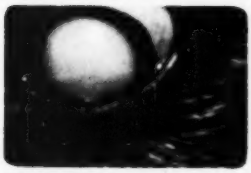


FIGURE 2

FIGURE 3

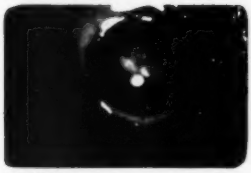


FIGURE 4

FIGURE 5

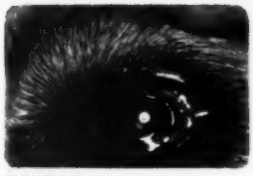
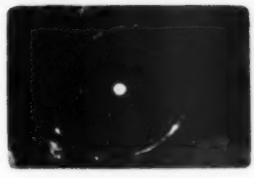


FIGURE 6

FIGURE 7

FIGURE 8



Illustrations of the clearing of the lens of which three general types were observed. Figures 1 and 2 illustrate uniform clearing from the periphery. Figures 3 and 4 illustrate irregular clearing from the periphery. Figures 7 and 8 illustrate a breaking up of the opacity into many particles resembling cirrus clouds. Figures 5 and 6 illustrate the clearing of a small central residue. None of the photographs were retouched after they were made or during the process of the production of the plates.

LEGENDS: **Figure 1.**—Mature cataract in left eye of Dog 1. The dog had received some treatment prior to this photograph and some very slight clearing of opacity had occurred about the periphery.

Figure 2. Dog 1, 10 months later than Figure 1, showing a further increase in clearing about the periphery and some clearing of the opacity throughout the lens. This cataract was very refractory to treatment in the doses used.

Figure 3.—Dog 5 at the start of treatment had an opacity like that of Dog 1, Figure 1. This photograph was made 8 months after start of treatment, the extent of the clearing of the opacity being graded as 60%.

Figure 4.—Dog 5 at 3.5 months after the photograph in Figure 3 was made. The extent of the clearing is graded as 85%. The lens in Dog 5 cleared from the periphery but irregularly in contrast to that in Dog 1.

Figure 5.—Dog 3 at the start of treatment had an opacity like that of Dog 1, Figure 1. This photograph was made 8 months after the start of clearing. The extent of clearing is graded as 90%. Just below the circular high light a golden yellow "Morgagnian-like body" is the only opacity left.

Figure 6.—Dog 3 at 8 months after the photograph in Figure 5 was made. Note just below the high-light the small remainder of the "Morgagnian-like body." The extent of clearing is graded as 98%.

Figure 7.—Dog 20 had what we termed an early or immature cataract in the left eye. This photograph was made at the start of treatment.

Figure 8.—Dog 20 at 7 months after the start of treatment. Note that this cataract developed striations and then "broke" into many parts resembling cirrus clouds. In this type of clearing of the opacity, the less dense opacity between the denser particles clears first.

wire fences, and stayed in his kennel more than usual. The dog was first seen on October 16, 1957, at which time he had a mature diffusely opaque cataract in the left eye and a diffusely but not densely opaque early cataract in the right eye. The dog could not climb stairs and appeared to be totally blind. A photograph of the eye was not made at this time because the camera was not at hand. However, since the owner had traveled from Urbana, Illinois, that day and was very anxious to hunt in the 1957 season with the dog, the dog was given a larger initial dose of extract 1 than usual, namely, 0.03 mg., and another dose of 0.03 mg. was given to the owner so that his local veterinarian could administer it to the dog.

The dog was returned one month after the first injection on November 11, 1957. The more recent cataract in the right eye had cleared about the periphery, revealing a more stellar opacity in the center of the lens on ophthalmoscopic examination. The green pigment was seen as were the blood vessels in the inferior portion of the fundus. The left lens showed no significant change. The owner reported that the dog now visually recognized him, did not run into wire fences and could climb stairs. The dog was injected with 0.03 mg. and the owner was given a dose of like size of extract 1 to be given to the dog 14 days later.

The owner returned the dog one month later on December 10. The owner reported that the dog could see as well as ever and that he had gotten 40 pheasants with the dog since November 12. The dog was now able to recognize everyone in the family on sight and would recognize and bark at strangers. He was normal in his play. In the woods or in dim light he was still cautious. The stellar opacity in the right eye was about the same. The cataract in the left eye had cleared considerably at the periphery and had revealed a small more opaque nucleus near the center of the lens. The green pigment and the blood vessels in the fundus were visible. The dog was given 0.03 mg. of extract 1, and a dose of the same size was given two weeks later. Two months after the start of therapy it was estimated that the opacity of the right eye had cleared to the extent of 90% and that in the left, 80%.

The condition which prevailed on December 10 continued until after January 10, 1958. Unfortunately the owner believed the dog was cured and did not return with the dog. By March 1, 1958, the dog's vision had deteriorated considerably, and before the owner could return with the dog again, the dog was hit by an automobile and killed on March 28, 1958.

Discussion

We have been unable to find a report in the medical literature in which colored photographs of the cataractous lens of man or dog have been published. Photography, we believe, can be improved. The colored plates (plate 1) are too blue. This and the high-lights were not touched up because it was more desirable to publish untouched photographs and plates.

Summary

Colored photographs showing that the cataractous lens of the dog may be cleared in part or *in toto* by the appropriate therapy have been presented.

REFERENCE

1. Ivy, A. C., Park, G. E., and Dolowy, W. C., Therapeutic Improvement of Canine Cataract. *Vet. Med.*, 54:205, 1959.

Rumen Juice Substitute

Elimination of rumen juice from bacteriological culture media may make some important dairy cattle nutrition research easier in the future.

Addition of known compounds rather than rumen juice makes it easier to control the experiments accurately. For instance, it avoids the complications presented by "unknown" substances in rumen juice.

Following leads of other researchers, it was learned that a mixture of fatty acids could substitute for rumen juice in the bacteriological medium to support good growth of several kinds of bacteria which failed to grow well in completely artificial media. The new artificial rumen fluid gives much better growth of the organisms. — *What's New in Farm Science, Bull. 529.*

Professional Opportunity

Within our memory the veterinary profession has gone from a disorganized group of hippologists to a highly organized group prepared to fight infectious disease on a nationwide basis. In no other country do so few oversee the health of so great a number of animals which feed and clothe so many. This progress, achieved by the veterinarian, has benefited all our citizens.

Even with this progress, there is more opportunity for a veterinarian today than ever before. There are still frontiers to be pioneered: we stand on the threshold of veterinary medicine's most thrilling decade, one holding promise for greater benefits to man and animal than has ever been known. —*Kenneth B. Haas, D.V.M.*

Editorial

A NEW ERA of PRESCRIPTION FEED MEDICATION

In a recent statement described as a re-evaluation of the use of antibiotics in swine nutrition, Dr. D. V. Catron, leading Iowa State College nutritionist, suggested that antibiotic feeding be used only during the stages of the life cycle when needed. He pointed out that over the past ten years there appears to have been a gradual decrease in gains and feed efficiency and that reports from the field indicate an increase of mycotic enteritis associated with long term feeding of antibiotics.

The new recommendation of selective use of antibiotics for maximum results is commendable and exactly what field veterinarians have been pointing out rather meekly for some years. There is no justification for puffing up with an "I told you so" ego. The facts are now recognized and our efforts will be best spent working out practical procedures that will help avoid some of the earlier pitfalls.

Doctor Catron says that it now appears that the following recommendations for antibiotic feeding of swine can be made in grams of antibiotic per ton of feed. Pregestation—0; gestation—0; farrowing—50 to 100; lactation—50 to 100; pre-starter—100; starter—100; grower (25 to 50 lb.)—50; growing and finishing (50 to 200 lb.)—0 to 20, depending on disease level). He further recommends rotating antibiotics of different spectrum from one cycle to another and adds that an absorbable antibiotic should be used during farrowing and lactation to supply milk levels for nursing pigs. Addition of Mycostatin is proposed to control mycotic enteritis when high antibiotic levels are fed continuously.

These recommendations make good sense but must shake the feed dealer who will be expected to carry 57 varieties of medicated feed and keep each customer's antibiotic requirements straight. Recent efforts have been intensified to stimulate closer cooperation between the feed industry and veterinarians. At joint conferences these groups have found each other good company. It has been suggested that feed dealers get acquainted with their local veterinarian over a cup of coffee, but at this stage we are still drinking coffee and talking about the weather.

With this new turn of events in antibiotic feeding, I contend that we have something worth talking about. Based on an experimental project explored several years ago, I present the following program for discussion.

1. The local feed dealer, the farmer and the veterinarian will get together in an evening session and plan together a complete breeding, feeding and disease control program best suited for this particular farm operation. The county agent or agriculture instructor will often like to sit in on these meetings and can offer valuable advice. While the feed representative calculates

proper feed requirements for each phase of the life cycle program, the veterinarian will schedule anticipated disease control measures. The finished program will be prepared in written form so that all three parties will have a time schedule for their files.

2. At scheduled intervals the veterinarian will call at the farm to review the current status of the program. The feed representative may wish to be present for at least some of these visits. The veterinarian will check weights, conduct diagnostic procedures such as hemoglobin determinations, parasite determinations, general examinations and, if indicated, sacrifice an individual for postmortem examination and complete laboratory study. During these visits, vaccination schedules, castration procedures and sanitary recommendations will be discussed, modified if indicated, and the feed additives prescribed for the next phase of the program. A written report of this visit will be sent to both the client and the feed industry representative.

3. Where the fed company has a major financial interest, it should foot the bill for this independent professional supervision. The company will be expected to stock the feed additives that might be prescribed and incorporate them at a minimal expense to the farmer.

4. The veterinarian will logically specify and supervise the use of immunizing agents and non feed additive medications. If he supplies these materials, it must be at cost plus a modest distribution markup. A fair fee for his professional services must be agreed on in advance. Where feed is mixed primarily on the farm, the operator must shoulder the professional fee. The veterinarian will function as his personal consultant when purchase is made of all supplies not raised on the farm.

5. Elimination of additives when not needed can offset the professional fee. In fact, recent data strongly suggest that growth rates obtained with antibiotics can be equaled or improved with low cost copper sulfate supplementation at the proper level. Costly antibiotics can be held in reserve to deal with disease problems that may be encountered.

Results with feeds medicated on a mass basis for all types of farms throughout the country have fallen short of those observed in individual experiments. As we approach the new era of feeding and disease control programs tailored to the individual farm operation, the door is opened wide to achieve efficiencies never before equaled. As a profession we are offered another chance. The stage is set to extend the professional services that can make these programs successful. At least a program of this type gives us something to talk about over our coffee.—*C. M. Cooper, D.V.M.*

Corners to Stay Out Of

Doctor Goofer, the fellow who just departed the spot marked X was plain lucky that his exit was not impeded by a fence corner. Don't let it happen to you. When a veterinarian is hurt, his practice is hurt. The dairy bull is the most dangerous animal in North America.

This is the first of a series of safety reminders by Dr. A. A. Case, University of Missouri, School of Veterinary Medicine, with illustrations by Mrs. Case. All situations are based on actual practice accidents.

V

Here each month are published ideas, suggestions and comments picked up by VM reporters at veterinary meetings.

The Meeting Circuit

Treatment for Tetanus with Tranquilizers

Owen *et al.*, in the January 24, 1959 issue of *The Veterinary Record*, discuss informatively, The Treatment of Tetanus with Particular Reference to chlorpromazine. This agent in the form of the hydrochloride as is well known to American veterinarians is a derivative of phenothiazine that has a depressant action on the central nervous system, and can be used in therapeutic doses without producing narcosis. The writers indicate that this is a preliminary report.

The conventional treatment with antitoxin, disinfection of the site of infection, controlling hearing by means of ear stuffing and quiet, are admittedly of great value. The authors state that chlorpromazine "relieves spasms, reduces exhaustion, and probably lessens the mental anxiety of the afflicted animal," and in some patients the ability to eat and drink is restored, but that "it is unlikely to be of value in comatose and severely exhausted cases."

Use of Antibiotics in Surgery

If one is going to use an antibiotic any time in conjunction with a specific surgery problem, the antibiotic is most efficient when used early—either at the time of, or before surgery.—*Charles E. Bild, D.V.M.*

New Laboratory Test

A laboratory test for bacterial, viral and comparable diseases seems to have a strong endorsement of laboratory technicians. A fluorescent antibody combination and the antigens, specific for various diseases, are preliminary requirements which may be made available for practitioners. Routine technical details require considerable time.

For diagnostic use some of the suspected tissue is placed on a glass microscope slide. Fluorescent material is added and a few minutes are permitted to elapse for the combination of the test material and the antibody in the tissue to be examined. Next, after washing away excess material, the specific antigen is added.

If the antibodies are present they will combine with the antigen, and when examined microscopically under ultra-violet light, numerous bright spots will be seen, indicating reaction. If there are no bright spots, results are negative. Further development of the test is being pursued, and if expectations are confirmed it will be of great diagnostic benefit.—*R. R. Dykstra, D.V.M.*

Bovine Leptospirosis

The usual mechanism of leptospiral bovine abortion appears to be: penetration of the placental barrier by leptospires during maternal leptospiremia; development of a fatal leptospirosis in the fetus after an incubation period; abortion of the dead fetus. The possibilities of isolating leptospires from aborted fetal material depend to a great extent on the time between fetal death and abortion, but leptospires are often demonstrable by silver-impregnation of fetal material from which leptospires cannot be isolated. (*Nordisk Vet. Med.* 10:302, 1958.)

Isolation of leptospires from aborted bovine fetuses has been reported only by Podgwaite *et al.*, but other investigators have succeeded in demonstrating leptospires in silver-impregnated sections of fetal liver and kidneys from naturally-occurring and experimentally-produced abortions in cattle. It has been stated that leptospires could not be demonstrated in two fetuses aborted from experimentally-infected pregnant heifers. However, re-examination of silver-impregnated sections revealed the presence of leptospires in the liver and kidneys of both fetuses.

During an epizootic of *L. pomona* on the Danish islands of Lolland and Falster, hemoglobinuria and other clinical symptoms of acute leptospirosis were observed in several cases, and many animals aborted during convalescence.

Eight strains of *L. pomona* were isolated from the urine of heifers and cows, and in the only two cases of abortion from which fetal material could be obtained, leptospires were demonstrated in silver-impregnated sections of fetal liver and kidney.

This observation supports the hypothesis that leptospiral bovine abortion is most often due to a fatal leptospirosis of the fetus. — *K. L. Fennestad and C. Borg-Petersen.*

Sterility

Sterility has been recognized as a problem of signal importance since artificial insemination has forced the keeping of accurate records. Some veterinarians say that they are too busy and know too little about it. However, the veterinarian has the fundamental knowledge, and there is plenty of literature available. Above all, he has the means at hand to acquaint himself with field cases and improve his technic.

There are too few rectal examinations of daily cases. The downer cow may reveal a fracture of the pelvis or a mass of tumors. An advanced case of pyelonephritis can often be diagnosed by finding an enlarged sensitive kidney and greatly enlarged ureters. Many pathological conditions may be revealed which are apt to be overlooked otherwise. In doing daily rectal examinations, the veterinarian can gradually educate himself for sterility work.

Rectal palpation is a matter of practice. The veterinarian who applies himself can become a better diagnostician and give his client a service.—*E. F. Ebert, D.V.M., 11th Annual Conference for Veterinarians, College Station, Texas.*

Traumatic Reticulitis

Although the diagnosis and treatment of traumatic reticulitis is becoming routine with practitioners, it is still worthy of discussion.

The therapeutic use of magnets given orally is apparently gaining favor with many practitioners. Dr. J. A. Muffly, a practicing veterinarian from Louisburg, Pennsylvania, has developed an instrument for the removal of ferrous hardware from the rumen and reticulum that is worthy of consideration. It consists of a plastic tube, somewhat smaller than the Kingman tube, to be passed through a non-magnetic copper pipe speculum into the rumen. A strong permanent magnet is suspended on the end of the tube by means of a small steel cable. A nylon cord, extending the length of the tube, is used to bend the tube after it reaches the rumen. The tube is turned toward the reticulum and the magnet is passed down into the reticulum by means of the steel cable. Any loose metal will be attracted to the magnet. A rubber shield protects the walls of the esophagus from sharp objects when the tube and magnet are retracted. The instrument was not designed to remove penetrating objects—*E. F. Ebert, D.V.M., 11th Annual Conference for Veterinarians, College Station, Texas.*

Chemical Poisoning

Dr. J. M. Woodcock, reports in the *Maine Veterinarian*, January 1959, that an oversight on the part of the owner resulted in the death of some of his cattle. A discarded sprayer found in a dump resulted in arsenical poisoning. In another case, a storage battery, used for electric fence, was found broken and nearly chewed away, resulting in the death of four heifers.

Veterinary interest in professional management of money matters has prompted the editors of VETERINARY MEDICINE *to seek out experts in the field for a series of reports. This is the fourth report on investments and management of funds for future security.*

Investment Management

JOSEPH M. FITZSIMMONS

Investors Diversified Services, Inc.
Minneapolis 2, Minnesota

THE AVERAGE PERSON, who would immediately call for professional help if he became ill or involved in a lawsuit, sometimes believes, paradoxically, that he can do it himself when investing his money in securities. Often his ventures turn out to be an expensive indulgence and may result in eventual erosion of capital. He learns that the selection of promising securities requires judgment gained from years of practical experience; that a portfolio of securities must be continuously watched and re-evaluated in the light of changing market conditions and economic outlook if its value is to be preserved and good prospects of fulfilling investment objectives maintained; that important investment decisions can be reached only after thorough research into financial reports, earnings and dividend records and growth potential, and that for this type of research he has neither the background, time nor facilities. He realizes, too, that much of his buying and selling can be influenced by emotional factors — over-optimism or disappointment in the performance of certain securities, reliance on tips, rumors, theories, or personal bias. In short, he has to admit that the business of prudent investing is not for amateurs but is a full-time, highly specialized job for professionals.

Until the advent of investment companies, or mutual funds, small investors could not afford the high cost of professional investment management. A primary reason for the tremendous growth of mutual funds in recent years lies in the fact that this modern form of investment has brought within the reach of average investors the professional services essential to sound investment practice.

Employed in the research department of management investment companies are many investment analysts, each a specialist in a specific industry or group of industries, research statisticians, professional librarians and many other specialists. The educational background of the men within the investment divisions of large management companies often aggregates well over 100 years of college training, even more years of investment experience and other years of experience in related fields.

Investment Field Trips

Among the many activities of investment departments, field trips play an important part. Their purpose is to enable investment analysts to make on-the-spot investigation into industries and corporations represented in their portfolios, as well as those that are being considered for investments in the future. Information gained on these trips helps to appraise a company's plans for the future, to determine its principal problems and in which direction it is likely to move. Most important, field trips offer opportunities to evaluate the ability and depth of a company's management. This knowledge can be gained only by personal contact and would not be revealed merely by a statistical study of the company's past record.

Top management of companies in which Funds are interested makes itself readily available to visiting analysts, who represent, in effect, the sizable investment capital of the Funds. This advantage would be difficult for the individual investor to obtain, apart from the time, travel and expense involved. Moreover, only a skilled investment analyst knows what to look for and what questions to ask.

Basic Steps

While each mutual fund proceeds with its investment research problems in its own way, there are a few steps to the approach of investment research that are followed by many well-managed investment companies.

The first step would certainly have to include an understanding of the basic forces in the American economy that could affect investment analysis. This involves a careful study of the many indices dealing, in effect, with the economic climate of the country. Well-informed business economists are often consulted in connection with this step.

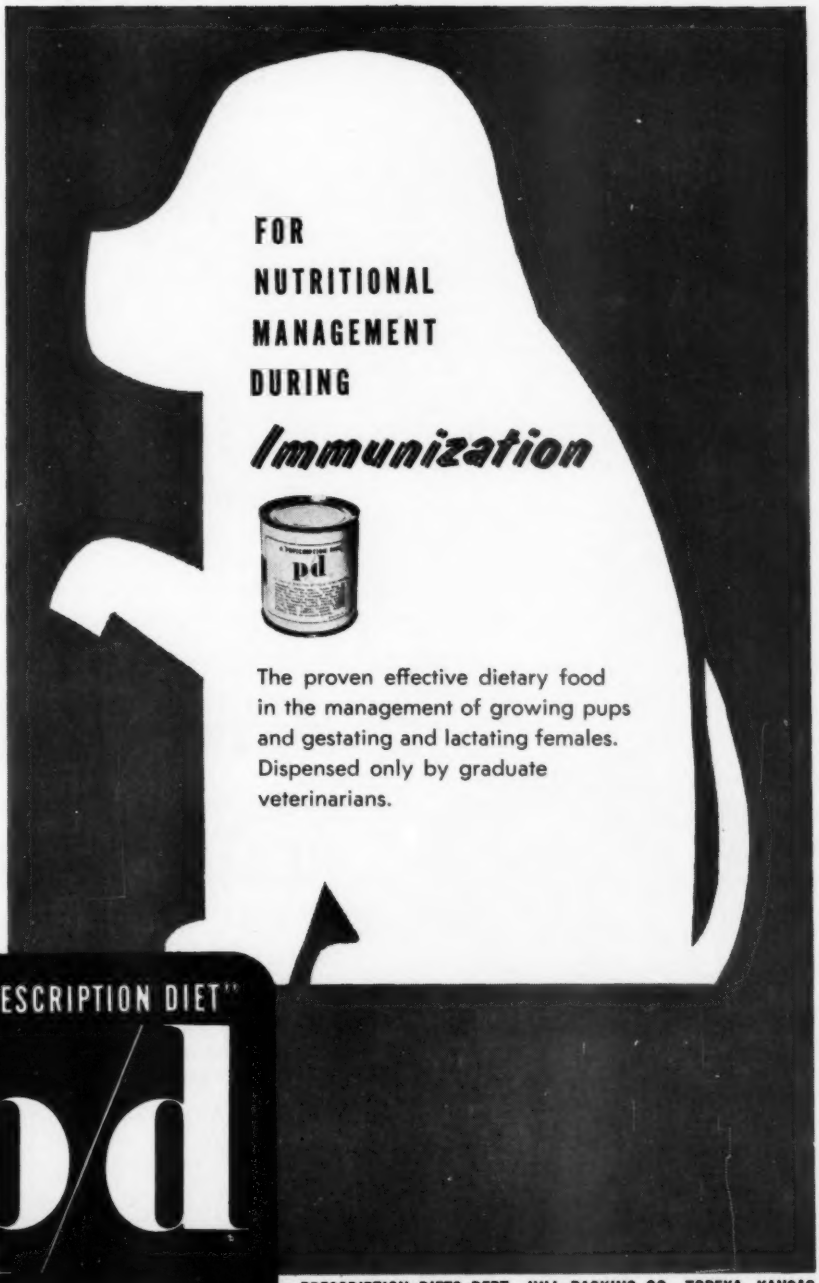
The next step is often to choose the industries which are suitable for investment. Almost imperceptibly industries change, are born, grow, reach maturity and in some cases die. An investment in the buggy whip industry during its later days obviously could not work out well, even though good companies were chosen. The purpose of studying industries is to determine which industries are healthy, growing, and which give promise of continuing to grow. This involves a broad study of all industries, the elimination of some and the considered selection of those which have the best long-term outlook. Once promising industries have been selected, it is necessary to weigh the amount of money going into them. This deals with the desirability of diversification, an appraisal of the relative merit of each investment and an analysis of the volume of investments available in the various fields. After the industries have been chosen and relative volume of investment determined, it is necessary to select the individual companies for investment. This means a careful and detailed study of each major company in the industry, an appraisal of its long-term outlook, its financial strength, its reputation and the character and ability of its management. Then it is necessary to compare these companies with other companies, consider the market price of the securities and determine which company represents the better relative investment value. Only after this thorough study has been completed can a decision be made to buy specific securities.

The last step in the investment selection process is often the submission of recommendations by the analysts to portfolio and top management committees.

Investments – a Modern Art

Investing is an art, not an exact science, and even the most capable and experienced investment analysts can be fallible. As is carefully pointed out in all of the Funds' prospectuses, no investment operation of any kind can be invulnerable nor assure a profit, and mutual funds do not make such claims. They make every effort, however, to improve their services continually and to provide shareholders at all times with prudent professional management. We believe it is logical to assume that a top-grade management team is in a better position to do a better job of investing than an individual investor could do.

The growth of confidence by the general public in investment management is mute testimony to the above.


FOR
NUTRITIONAL
MANAGEMENT
DURING
Immunization
pd
The proven effective dietary food
in the management of growing pups
and gestating and lactating females.
Dispensed only by graduate
veterinarians.
A "PRESCRIPTION DIET"
p/d
FOR FEEDING
INDIVIDUAL PATIENTS
PRESCRIPTION DIETS DEPT., HILL PACKING CO., TOPEKA, KANSAS
k/d p/d r/d i/d c/d f/d

(Advertisement)

Research Reveals Highly Effective Anthelmintic for Cattle

The results of recently intensive clinical research revealed an anthelmintic that is highly effective in cattle. Individual animals were confined in special stalls and administered different phenothiazine drench formulations for testing. All urinary and fecal excreta were recovered and each excretion was individually analyzed chemically to determine how much of the dose went into the digestive tract and amount of the dose available for killing worms. Dosages were given on an identical basis.

GREATER CONCENTRATION

Results obtained from this modified formulation were better than that of unmodified drenches generally used. Tests show that modified formulations produced on the average 6 to 8 times more phenothiazine in the digestive tract in a shorter period of time than other drenches. For example, peak percentages (above 1%) of the modified chemical were obtained in only 17 hours post treatment while the average of unmodified formulations returned a peak percentage of less than .2% 40 hours or later post treatment.

Other effective products are Pro-Brand Kabtin, a nontoxic demulcent for control of diarrhea from dietary or simple digestive causes; Pro-Brand KZ, antiseptic fungicide for ringworms and mycotic dermatoses; Pro-Brand Chap-Et a protective ointment for application to udders to reduce swelling and soreness. For details write to Pro-Brand Products Company, P. O. Box 4186, Fort Worth, Texas.

Epps Joins Diamond Sales

John A. Epps, formerly of Denver, Colorado, has joined Diamond Laboratories as Eastern Regional Sales Manager, according to an announcement by the Des Moines firm.

John A. Epps

He had previously been with Armour Laboratories and Chas. Pfizer & Co., in the veterinary division of both firms.

NEW! Square Sun

PORTABLE, TWIN BLOWER

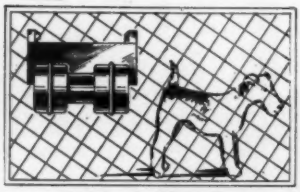
HEATER & DRYER

WILL NOT OVERHEAT!

Super efficient, finest quality lightweight heater and dryer ever devised. Special individual heat control for warm or cool air. NEW heavy duty heating element provides hours of constant heat . . . cuts drying time in half. Motor and blowers guaranteed for 1 year.

SPECIFICATIONS

Twin 3" nozzles. Air output 2800 linear ft. per min. at normal room temps. 115 Volt, 60 cycle single-phase self-cooling AC operation. Finished in satin black enamel with silver screen.



EASILY transferred from cage to cage, this lightweight unit hooks onto any type cage with special 'non-slip' hooks.

For additional details write:

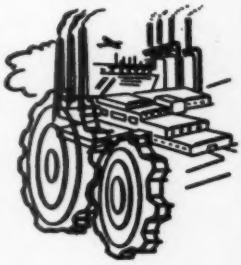
SQUARE SUN MACHINE CO. 2404 Fuller Street, New York 61, N. Y.

a division of . . . **M. Langhaus & Son Enterprises**

United Funds, Inc.

PERIODIC INVESTMENT PLANS

To Acquire Shares of United Accumulative Fund



offer you investment units in multiples of $2,500 with investments as low as . . . $125 Initially and $25 Periodically. Under a United Periodic Investment Plan you invest in

UNITED ACCUMULATIVE FUND SHARES
a diversified, managed mutual fund with investments in over 100 American corporations.

Waddell & Reed, Inc.

Principal Underwriters

20 West 9th Street
Kansas City 5, Mo.

40 Wall Street
New York 5, N. Y.

For Prospectus and Descriptive Literature, without obligation, return this advertisement.

NAME _____

ADDRESS _____

CITY _____ STATE _____

"OFFICES COAST TO COAST"

MASON'S New KENNEL RUNS
NOW AVAILABLE
For SMALL ANIMAL HOSPITALS
Quickly Erected - NO POSTS REQUIRED
Can be set on concrete or wood floors or directly upon the ground, joining to, or independent of Building. Composed of strong, self-supporting Fence sections and Gate Units with GATES BUILT-IN and Lockable Latches.
FREE CATALOG
Send for Free Catalog with Low Direct Factory Prices of Kennel Fences of all kinds, Kennel Doors, Cages and Hospital Equipment.
THE MASON FENCE CO., Box 77, LEESBURG, OHIO

HOW LONG AFTER VACCINATION for leptospirosis can a clean blood test be expected? Doctor Ferguson, Michigan State University, points out that there can be a great deal of variation. Titers produced by vaccination never equal those from natural infection.

PRO-BRAND
RE-PEL
PROTECTS HORSES FROM ANNOYING HORSE FLIES
Keep horses and show stock protected from annoying horse flies, stable flies and other tormenting insects. Pro-Brand RE-PEL sets up a protective shield that kills and repels all flies. One application lasts up to 48 hours and longer. Order Pro-Brand RE-PEL, the non-toxic easy-to-use repellant, now!
PRO-BRAND PRODUCTS CO.
FORT WORTH 6, TEXAS

Distaff

MRS. E. F. (HAZEL) EBERT

I realize collections vary in different locations. If a veterinarian has a dairy practice, the client will have a monthly income and can pay his account to the veterinarian each month. If the practice is in a beef cattle section the client will probably pay semi-annually or annually, depending on when he sells cattle. This is also true of the grain farmer who keeps a small mixed herd. The farmer will pay when he threshes or sells cattle. The client who raises hogs may be another who does not have a monthly income, so his account must be adjusted to the time of his income.

It might seem to some people not familiar with small animal practice that there would be little need for charge accounts in this practice. It is so easy to say, "Doctor send me a bill." So the small animal practitioner has a problem also.

Many veterinarians have signs, "Cash Only," or "No animal released without payment." We had no such signs and made no demands for payment. I do not know how effective these signs are; one friend told us he had no success in collecting after the dog or cat left the hospital, therefore he felt the need of such signs.

One thing my husband insisted on was that an itemized statement be in the client's office on the morning of the first of each month.

Reliable collectors and collecting agencies have been established for the purpose of collecting medical accounts for both physicians and veterinarians. In many cases the agencies are able to give returns in money, but they may lose a client who otherwise might have paid his bill.

One of the nicest letters we ever received came in 1954. On November 1, 1939 I had sent a statement for $3. Later we learned the client had moved out of the city, so I sent no more statements. In December 1954 we received a "thank you" note on the bottom of the original statement along with the $3. check.

NEW GAINES: first meal that mixes better than expensive kibble!

DEVELOPED IN THE GAINES RESEARCH KENNELS

•

TESTED IN 14 INDEPENDENT KENNELS

New crunchy nuggets keep their shape for hours ... won't mush or cake, even in boiling water!

Yes, new "controlled" texture means easier mixing . . . easier eating. Gaines gives your dogs a new taste, too: the flavor of real beef!

New Gaines is highly digestible. Specially processed to prevent stool problems. Better-than-ever in body, to keep your dogs at their winning best. And each nugget contains the same homogenized balance of essential nutrients that has helped generations of champions to a longer prime of life.

All these advantages—in the first meal that mixes even better than kibble! Discover New Gaines for yourself—soon!

GAINES MEAL: *The "Longer Prime of Life" Dog Food*

New Gaines Meal has a bright new bag: 25- and 50-lb. sizes

Classified Advertisements

Twenty-five words or less, $3.50 — minimum charge; additional words 10 cents each. Replies sent care VETERINARY MEDICINE. 50 cents additional to cover forwarding postage. Remittance must accompany order.

Names of classified advertisers using V. M. key numbers can not be supplied. Address your inquiry to key number care VETERINARY MEDICINE, Suite 803, Livestock Exchange Building, Kansas City 2, Missouri, and it will be promptly forwarded to the advertiser.

Deadline for copy — 5th of month preceding date on issue.

Wanted

SALES OUTLETS: Private corporation in insecticide business wishes to acquire controlling interest in veterinary supply house business with established sales outlets. Present management would be retained. Offers will be treated in confidence. Write Box 570, care VETERINARY MEDICINE.

MANUFACTURER'S REPRESENTATIVE: Wanted for sure fire sales on heavy duty Dog Clipper and Mechanical Blade Sharpener. Dogs can be clipped in half the time. Money back guarantee. Norwood Associates, Dept. V-1, 2541 Irwin Avenue, New York 63, New York.

VETERINARIANS: Full time for statewide meat inspection program, salary $6,098, and one for research in the field of animal health, nutrition, and breeding, salary $7,818. New York State license required. Retirement, Social Security, Health Insurance, liberal sick leave, vacations. Write: Mr. Sylvester J. Bower, Director of Personnel, New York State Department of Health, Albany, New York.

For Sale

MINNESOTA MIXED PRACTICE: New modern home. Address Box 571, care VETERINARY MEDICINE.

SMALL ANIMAL PRACTICE: In Wilkes-Barre, Penna. area. (Do not own building.) Will sell for inventory plus equipment cost. Excellent opportunity. Price approximately $6,000. Retiring. Write Box 569, care VETERINARY MEDICINE.

DOG BOOKS: Write us. Breed books $4 each—Boston, Chi, Saint, Cocker, Peke, Springer, Dane, Dachs. Ken'l Bldg., $3. Judy Publishing Company, 2517 Michigan Blvd., Chicago 16, Illinois.

MIDWEST MIXED PRACTICE: 80% dairy and hogs. Includes home, hospital, all drugs and equipment. $10,000 to handle. Other interests. Address Box 568, care VETERINARY MEDICINE.

Services

SLIDES PREPARED: Histology microscopic slides prepared for veterinary pathology and research. Ten years experience guarantees unsurpassed workmanship. Fast mail service. Write your needs. Bay Histology Service, 409 Roosevelt Way, San Francisco 14, California.

VETERINARY MEDICINE: Wanted, back issues of VETERINARY MEDICINE. We need September and November 1958 issues of the journal, and January and March 1959 copies as well. For every number turned in, your subscription will be moved up one month. Send copies to VETERINARY MEDICINE, 803 Livestock Exchange Building, Kansas City 2, Missouri.

PRO DIET FOODS

LP (low protein)
HP (high protein)
BLAND GI (gastro-intestinal)
L-C (reducing)
CAT
HORSEMEAT

Produced by a veterinarian for the veterinarian.

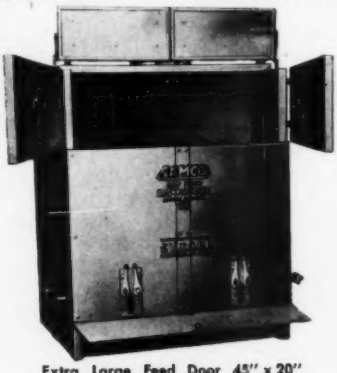
35 years of experience.

Write for literature and prices.

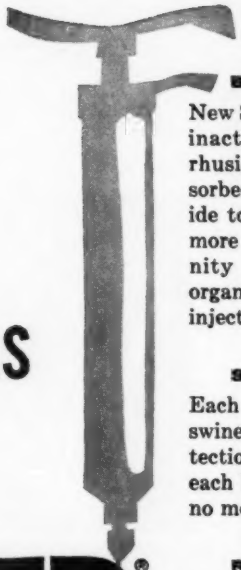
Shipment made direct from plant to hospital.

PEDRICK LABORATORIES
Box 306 **Sand Springs, Okla.**
C. Pedrick, D.V.M.

SAMCO
CREMATORY DESTRUCTOR
Gas Fired for
ANIMAL CARCASS CREMATION
(Engineered Special for Veterinary Practitioner)



Extra Large Feed Door 45" x 20"
Capacity 17 Bushel — 2 Burners
100% SAFETY AUTOMATIC THERMO PILOT VALVE
Each Main Burner with Pilot Light and Timer Shut-off.
GREAT HEAT and FIRE POWER
Smaller Sizes Available
Investigate unique purchase plan for great savings
SYRALL MFG. CO., 511 N. State, Syracuse 3, N.Y.



ERYSIPELAS CONTROL

NEW SWEB®

Swine Erysipelas Bacterin

for immunization of healthy swine and turkeys

ARMOUR

BUILDS SOLID IMMUNITY

New SWEB is a highly concentrated, chemically inactivated whole culture of Erysipelothrix rhusiopathiae. The killed organisms are adsorbed and concentrated with aluminum hydroxide to delay the release of antigens and assure more uniform absorption. Solid, strong immunity against five field strains of erysipelas organisms is developed 14 to 21 days after injection.

SWINE-TESTED FOR POTENCY

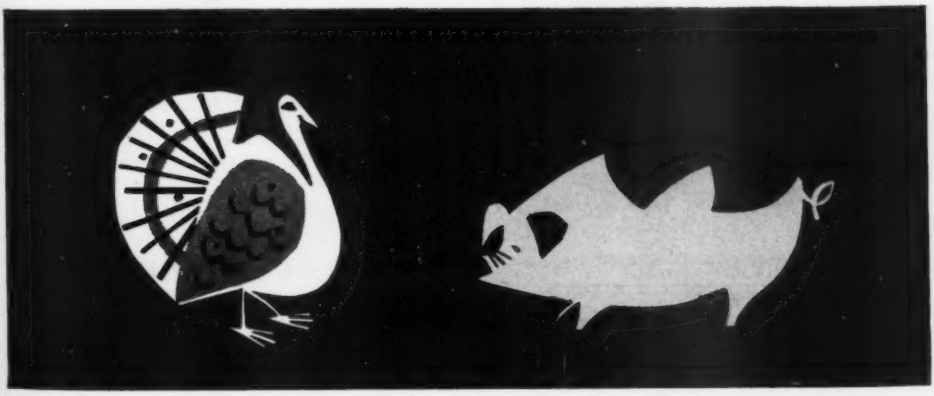
Each serial lot of SWEB is potency tested in swine before being released for sale. Proven protection for pigs is carefully demonstrated for each lot of bacterin produced. Yet SWEB costs no more than mouse-assayed bacterins.

REACTION RISK SMALL

New SWEB virtually eliminates the danger of vaccination setbacks, local or anaphylactoid reactions. Armour's culture methods dispense with the use of equine or other animal serums. Only porcine blood fractions are used. This unique process produces a bacterin that combines maximum concentration of antigens with minimum risk of serious side reactions.

NEW SAFETY AND CONVENIENCE

The organisms in SWEB are completely inactivated and cannot introduce erysipelas infection to clean premises. SWEB is supplied in 250 cc. bottles—sterile and ready for immediate use.



B-P
HALIMIDE*
the CONCENTRATE with the TWOFOLD ACTION
For Instrument Disinfection

BACTERICIDAL
—when diluted with water (except the tubercle bacillus)
TUBERCULOCIDAL *also*—
when diluted with alcohol

**Trademark of Bard-Parker Co., Inc.*

***PLUS**—these other important advantages . . .*

NON-CORROSIVE
—*No* anti-rust tablets to add.
STABLE
—Need not be changed frequently.
ECONOMICAL
—1 oz. makes 1 gal. of solution.

Bard-Parker HALIMIDE is the result of years of research to develop a concentrate combining maximum bactericidal potency and trouble-free performance. IT'S ECONOMICAL . . . *any way you look at it!*

LIST PRICE
4 oz. bottle..... $2.50
Please ask your dealer for quantity discounts.

B-P INSTRUMENT CONTAINER No. 300
Of stainless steel and PYREX glass with airtight cover. Ideal for use with B-P HALIMIDE.

B-P BARD-PARKER COMPANY, INC.
DANBURY, CONNECTICUT
A DIVISION OF BECTON, DICKINSON AND COMPANY

B-P and HALIMIDE are trademarks

H. E. Miller Receives Award

Mr. Harry E. Miller, left, Director of Continued Education at the University of Michigan School of Public Health, was recently awarded a Certificate of Appreciation by Dr. H. J. Stafseth, acting on behalf of

the members of the Planning Committee of the First Institute on Veterinary Public Health Practice, held at the University of Michigan School of Public Health, October 6-9, 1958.

Laboratory Service for Veterinarians

VETERINARY DIAGNOSTIC LABORATORIES

These laboratories have been established to aid veterinarians in the diagnosis of obscure as well as common ailments in large and small animals. The chief aim of our staff is to give quick and accurate diagnosis at all times.

Our service includes fecal examinations, anti-biotic sensitivity tests, urinalyses, blood counts, tissue sections, bacteriological cultures, cultures for ringworm and blood chemistry. It is designed to assist owners and breeders of stock of all kinds including dogs, cats, horses, cattle, poultry, hogs and sheep.

Sample containers and price list on request.

VETERINARY DIAGNOSTIC LABORATORIES
3 East 65th St., New York 21, N.Y.
Telephone: LEhigh 5-9188

Weight losses reduced when cattle are shipped*

Veterinarians and cattlemen have long sought to reduce weight losses suffered by cattle when shipped from range to feed lot. Weight losses caused by the rigors of handling, loading, and shipping cannot be reduced unless the tension, nervousness, and unruliness associated with these procedures are controlled.

INJECTION SPARINE given intramuscularly to cattle prior to shipment markedly reduces weight losses when cattle are shipped. SPARINE-treated cattle remain steady on their feet even in transit *without impairment of consciousness.*

In a study supervised by veterinarians, cattle were shipped from a range in Oklahoma to a Colorado feed lot—an 18-hour truck trip. The veterinarians observed that not only were weight losses reduced by over fifty per cent in most cases, but the animals given SPARINE, 0.5 mg. per pound of body weight, were easier to handle; they went back on feed faster because they adjusted to their new surroundings without milling, fence walking, and bawling.

In Small Animal Practice

SPARINE is useful also to reduce struggling during physical and x-ray examinations, and during dental procedures. When administration of a general anesthetic is undesirable, local anesthesia supported by SPARINE offers a satisfactory substitute. Given orally or parenterally, SPARINE calms animals during hospitalization and convalescence, reducing patient mutilation of bandages, sutures, etc. As adjunctive therapy, SPARINE reduces self-inflicted damage associated with otitis, eczema and pruritus.

SPARINE is safe. No untoward reactions or blood dyscrasias have been reported following use of SPARINE.

*From range to feed lot.

Injection Sparine®

HYDROCHLORIDE

Promazine Hydrochloride, Wyeth

AVAILABLE: INJECTION: 50 mg. per cc., vials of 10, 30 and 100 cc.
TABLETS: 25, 50, 100 mg., vials of 50.

SUPPLIED ONLY TO VETERINARIANS

Comprehensive literature supplied upon request

Wyeth®
Philadelphia 1, Pa.

This department will announce each issue new therapeutic items, equipment, services, and literature of interest to veterinarians. All claims made are those of the firms concerned. Send communications to the address noted.

Reader's Service

The first **Antibiotic Feed Supplement** (Terramix ABD-25—Pfizer) providing added treatment benefits of vitamin fortification has been introduced. It is a combination of the broad spectrum antibiotic oxytetracycline hydrochloride with vitamins A, B_{12}, D_3 and riboflavin. It is especially formulated to provide supportive therapy in herds following treatment, or whenever parenteral administration or water medication is inconvenient or undesirable. For Information ask Chas. Pfizer & Co., 800 Second Avenue, New York 17, New York.

Business Card Caddy with alphabetical guides adjusts to hold few or many cards up to 3½ in. x 2 in. Can be used on desk or

Hahn Co.

fit neatly in top drawer. Check with the Hahn Co., Box 64532, Los Angeles 64, California. Price—$2.98.

A new **Modified Live Virus Vaccine** of canine tissue culture origin (Hepoid TC—Fromm Laboratories) has been made available to the profession. The product is recommended for immunization of dogs and foxes against infectious hepatitis. For more information check with Fromm Laboratories, Grafton, Wisconsin.

A New Antibiotic, thiostrepton (Neothion—Squibb) has been cited as the answer to the elimination of penicillin residues in fluid milk. Utility of the new antibiotic is unique because it has never been used in human therapy, and thus could not contribute to the development of resistant strains to its effectiveness in human beings. For more information, ask E. R. Squibb & Sons, 745 Fifth Avenue, New York 22, New York.

A Sterilant intended for rapid sterilization of large surface areas such as walls and floors has been commercially introduced by Wilmot Castle Company. The sterilant is a vaporous form of the chemical beta-propiolactone. Further information on availability and application of beta-propiolactone for sterilizing purposes may be obtained by writing Wilmot Castle Company, 1931 Henrietta Road, Rochester, New York.

A Kem-Dip/Dem-Dust Bulletin has been issued giving details on the development of resistance to insecticides, life cycles and important habits on brown dog ticks and fleas, and information on new formulas recently approved for control of these parasites. These small, handsome brochures are available to veterinarians for distribution to their clients by writing Vet-Kem Laboratories, P.O. Box 14321, Dallas 34, Texas.

A Catalog of Veterinary Products that sets forth the policies of the company as well as products it sells has been published by Chicago Pharmacal Company, 5547 Ravenswood Avenue, Chicago 40, Illinois.

Veterinary Calendar

Jun. 4-5. **Texas A. & M.,** 12th annual Texas Conference for Veterinarians. College Station, Texas. Dr. R. D. Turk, conference chairman.

Jun. 9-11. **Montana Veterinary Medical Association,** annual meeting. Butte, Montana.

Jun. 14-15. **Wyoming Veterinary Medical Association,** annual meeting. Sheridan, Wyoming. Dr. J. F. Ryff, P.O. Box 960, Laramie, Wyoming, secretary.

Jun. 16-17. **Ohio State University, College of Veterinary Medicine,** annual spring conference. Columbus 10, Ohio.

Jun. 17-18. **Utah Veterinary Medical Association,** annual meeting. Provo, Utah.

Jun. 18-20. **Animal Reproduction Symposium.** University of Illinois, Urbana, Illinois. Dr. P. J. Dzuik, III Animal Genetics, University of Illinois, Assistant Professor of Animal Physiology.

Jul. 20-22. **Canadian Veterinary Medical Association,** annual convention. Ontario Veterinary College, Guelph, Ontario, Canada. Dr. H. J. Neely, Ontario Veterinary College, Guelph, Ontario, chairman.

Jun. 20-22. **Idaho Veterinary Medical Association,** annual meeting. Moscow, Idaho.

Jun. 21-23. **California Veterinary Medical Association,** 71st annual convention. Miramar Hotel, Santa Monica, California. (On June 24, a group of members will leave on a 10-day adjourned meeting in Hawaii.) Executive Secretary, 3004 16th Street, San Francisco, California.

Jun. 23-25. **North Carolina Veterinary Medical Association.** Morehead Biltmore Hotel, Morehead City, North Carolina. Dr. J. T. Dixon, 3026 South Main Street, Winston-Salem, North Carolina, secretary-treasurer.

Jun. 23-25. **Maritime Veterinary Associations,** joint conference. Mount Allison University, Sackville, N. B. Dr. P. D. McKercher, Box 310, Sackville, N. B., general chairman.

Jun. 25-26. **Maryland State Veterinary Medical Association,** summer meeting. George Washington Hotel, Ocean City, Maryland. Dr. Harry L. Schultz Jr., Baltimore, Maryland, secretary-treasurer.

Jul. 13-14. **Kentucky Veterinary Medical Association,** 48th annual convention. Sheraton-Seelbach Hotel, Louisville, Kentucky. Dr. L. S. Shirrell, 545 East Main, Frankfort, Kentucky, secretary.

Aug. 23-27. **American Veterinary Medical Association,** 96th annual meeting in conjunction with **Third Pan American Congress of Veterinary Medicine.** Municipal Auditorium, Kansas City, Missouri. Dr. H. E. Kingman Jr., 600 S. Michigan Avenue, Chicago, Illinois, executive-secretary.

BEAVER BLADES for VETERINARIANS

Six conventional shape blades designed for a wide variety of surgical uses. Manufactured of the finest quality, high carbon Swedish steel, the blades are honed to extreme sharpness to reduce operative bleeding and trauma to soft tissue. Each blade locks easily and securely into a standard Beaver handle manufactured of solid nickel-silver and designed to be held with comfort even during the longest operations.

Precision workmanship insures long life for both blades and handle. Beaver surgical blades have been used for years for all types of animal surgery.

No. 7 Handle (Nickel-silver) $1.25

No. 8 Handle (Stainless Steel) $2.00

Blades, per doz. $1.50

SURGICAL KNIVES BY Rudolph Beaver

WALTHAM 54, MASS.

AND NOW... *the unique benefits of the*

HYDELTRONE® *Family of Steroids in*

HYDELTRONE

MASTITIS OINTMENT with

PREDNISOLONE 21-PHOSPHATE® to suppress acute inflammation so that a BROAD-SPECTRUM combination of ANTIBIOTICS can get to the site of infection!

- *2,000 times more soluble than prednisolone acetate or hydrocortisone acetate*
- *diffused rapidly through udder tissue... readily miscible in warm milk*
- *aids in suppressing acute inflammation*

HYDELTRONE MASTITIS OINTMENT CHECKS INFLAMMATION
CONTROLS INFECTION—HELPS GET COWS BACK ON FULL MILK PRODUCTION—*FASTER!*

MERCK & CO., INC.
CHEMICAL DIVISION
RAHWAY, NEW JERSEY
VETERINARY

MERCK

Each 5 Gm. single-dose tube contains:

PROCAINE PENICILLIN	100,000 UNITS
DIHYDROSTREPTOMYCIN (AS THE SULFATE)	100 MG.
NEOMYCIN (AS THE SULFATE)	100 MG.
PREDNISOLONE 21-PHOSPHATE	5 MG.

SOLD TO VETERINARIANS ONLY

©MERCK & CO., INC.

®TRADEMARK

a complete

vitamin-mineral dietary supplement—with taste appeal to small animals

pet-tabs

This new meat-flavored dietary supplement contains nineteen important ingredients in tablet form. Small animals like them!

The comprehensive Pet-Tabs formula:

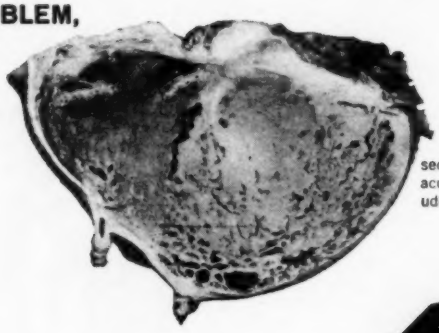
- Balances the daily ration.
- Speeds recovery from illness.
- Shortens convalescence after surgery.
- Eliminates complicated additions to rations.
- Maintains health and vigor in older animals.
- Aids growth in young animals.

Dosage: 1 Pet-Tab daily.
Supplied: In bottles of 50. To veterinarians only.

Send for literature

THE S. E. MASSENGILL COMPANY
Veterinary Division
Bristol, Tennessee

FOR AN OLD PROBLEM,



section of acutely inflamed udder

A NEW REMEDY IN A NEW PACKAGE

DIAGNOSIS: **MASTITIS**

MEDICATION: **SPECIAL FORMULA NO. 17900***

Hydrocortisone – combats inflammation

Neomycin, Polymyxin, Procaine Penicillin } combat infection

PROGNOSIS: **Excellent, even in advanced cases**

PACKAGE: **XPRESIT***

A disposable, easy-to-use container-applicator permitting rapid introduction of a complete dose through the teat canal.

Available in economical cartons of 12 Xpresits, each of which contains 10 cc. of the active ingredients in a nonirritating, milk-miscible base.

Try SPECIAL FORMULA NO. 17900 in the XPRESIT container on your next mastitic case.

*TRADEMARKS

Veterinary Division / THE UPJOHN COMPANY / Kalamazoo, Michigan

Upjohn

infected eyes and ears respond rapidly to

FURACIN®

brand of nitrofurazone

Wide-spectrum, non-irritating nitrofuran in formulations especially adapted for the treatment of bacterial infections of the

eye

FURACIN
SOLUBLE POWDER VETERINARY

"FURACIN in its water-soluble base is completely soluble in body fluids. These properties make it ideally suited for the treatment of ophthalmitis and postoperative therapy."*

FURACIN Soluble Powder Veterinary is conveniently applied directly from the plastic puff-bottle.

These FURACIN products contain FURACIN 0.2% in water-miscible vehicles. Therefore, they may be left in wounds to be sutured.

Order plastic "puff" bottle of 10 Gm.
Available through your professional veterinary distributor.

ear

FURACIN
EAR SOLUTION VETERINARY

This anhydrous, water-soluble dosage form of FURACIN affords prompt relief of otic infections in small animals.

In canine otitis externa, poor drainage, plus the trauma of scratching and rubbing, often frustrates therapy. It is noteworthy that "FURACIN has been used successfully in this condition . . ."*

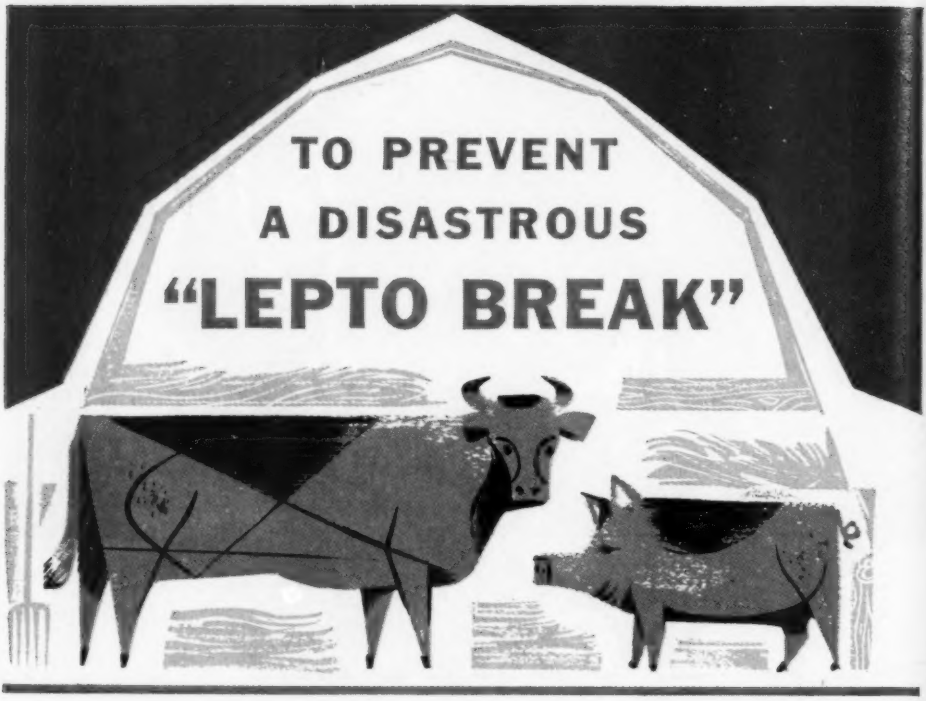
In cases of otitis in which exudate is present, you will find the drying effect of FURACIN Soluble Powder Veterinary to be most beneficial.

Available in dropper bottle of 1 fl.oz.

*Belloff, G. B.: Calif. Vet. 9:16 (Nov.-Dec.) 1956.

NITROFURANS — a *new* class of antimicrobials—neither antibiotics nor sulfonamides

EATON LABORATORIES NORWICH, NEW YORK



vaccinate with new

L-povac®

Leptospira pomona bacterin ARMOUR

Protects against deaths, abortions, milk and meat production losses, due to leptospirosis in swine and cattle.

• stimulates active immunity • controls spread of leptospirosis

a killed pure whole culture . . . . . no danger of infecting healthy animals . . . . . each serial lot subjected to rigid quality control tests for safety, potency and purity

Injected subcutaneously in 5 cc. doses—with booster dose of 5 cc. recommended at 6-month intervals.

Available in 25 cc. (5 dose), 50 cc. (10 dose), and 100 cc. (20 dose) vials.

Sold only to licensed veterinarians.

ARMOUR VETERINARY LABORATORIES • KANKAKEE, ILLINOIS

Pitman-Moore Executive Succumbs

Hibbard O. Ball, executive vice president of Pitman-Moore Company, died unexpectedly March 13, in Toronto, Canada. He had been attending a meeting of the Board of Directors of the Pitman-Moore Company of Canada and suffered a heart attack two days before.

A graduate of the Indianapolis College of Pharmacy, Ball joined Pitman-Moore Company in 1927 as a medical service representative in Detroit. During World War II he served as a major in the Army Medical Service Corps.

Salom to Represent Armour

William T. Salom has been named veterinary sales representative covering Pennsylvania, Maryland, Delaware and New Jersey, for the Veterinary Department of Armour Pharmaceutical Company.

Salom has a degree in animal husbandry from Pennsylvania State University and was formerly employed by Eaton Laboratories.

"CAP-CHUR" EQUIPMENT

Automatic projectile type syringe delivered by a specially designed pneumatic rifle.

Excellent for immobilizing, capturing, restraining or treating wild or feral animals.

Effective for animals of all sizes. From one to ten milliters of any liquid compound can be injected into an animal from distances up to approx. 50 yards.

Reasonably priced. Write for complete information.

PALMER CHEMICAL & EQUIPMENT COMPANY, INC.

134 Houston Street, N. E. MUrray 8-2077
ATLANTA 3, GEORGIA, U.S.A.

We help you with Your Responsibility

If the livestock raiser is to become successful he's got to depend upon the experienced services of the graduate licensed veterinarian. That throws a lot of responsibility on YOU.

And part of your responsibility to the livestock raiser includes supplying his animals with veterinary products that are of the highest quality.

That's where GRAIN BELT AND AFFILIATED join the team. The folks at GRAIN BELT pride themselves in supplying consistent, high quality products. In fact, every product is laboratory tested for safety, purity and potency, that equal or surpass strict government standards. Remember GRAIN BELT AND AFFILIATED for quality products and dependable service. It's your responsibility.

44 Years of Quality Products

GRAIN BELT SUPPLY CO.
4902 South 33rd Street
Omaha, Nebraska

Affiliated

Co-owned by Grain Belt

GUARANTEED TO WORK IN MINUTES

TROPICAL

SAFE—100% EFFECTIVE

FLEA POWDER

Guaranteed to kill all fleas in minutes. Excellent residual action. Contains Lanolin. Pleasant fragrance with no trace of Malathion odor. Impregnated with liquid chemicals — not a dry mixture. Each dust particle contains flea destroying Malathion and Methoxychlor. Can be stored for months without losing strength. Made with micronized cosmetic grade talc.

ACTIVE INGREDIENTS:
Malathion, Methoxychlor technical, Dichlorophene, Hexachlorophene, Mineral Oil, Lanolin.

YOUR OWN PRIVATE LABEL AT NO EXTRA CHARGE is available on all Florida Veterinary Laboratories Co. products.

FLEA POWDER FOR DOGS • FLEA POWDER FOR CATS • TICK SALVE • FOAM CLEANER NEW AEROSOL PET SPRAY • TICK AND FLEA SPRAY • KENNEL DUST.

FLORIDA VETERINARY LABORATORIES CO.
Division of Pet Chemicals, Inc.
1038 N. W. 21st Terrace, Miami, Florida

Examinations

South Dakota

The South Dakota State Board examinations will be held in Brookings, South Dakota on June 22-23, 1959. Applications should be sent to the Office of Livestock Sanitary Board, Pierre, South Dakota. For information write Dr. M. D. Mitchell, State Veterinarian of South Dakota.

Wyoming

Examinations for license to practice veterinary medicine in Wyoming are scheduled for June 18-19, in the State Capitol, Cheyenne. For further details, contact Dr. G. H. Good, Secretary of the Examining Board, at the State Capitol.

Missouri

The Missouri Veterinary Board will hold the 1959 State Board examination for veterinarians to practice in the state of Missouri on June 5 and 6 at the Veterinary Clinic, University of Missouri, Columbia, Missouri. Application blanks can be secured from Dr. L. A. Rosner, Box 630, Jefferson City, Missouri, chairman.

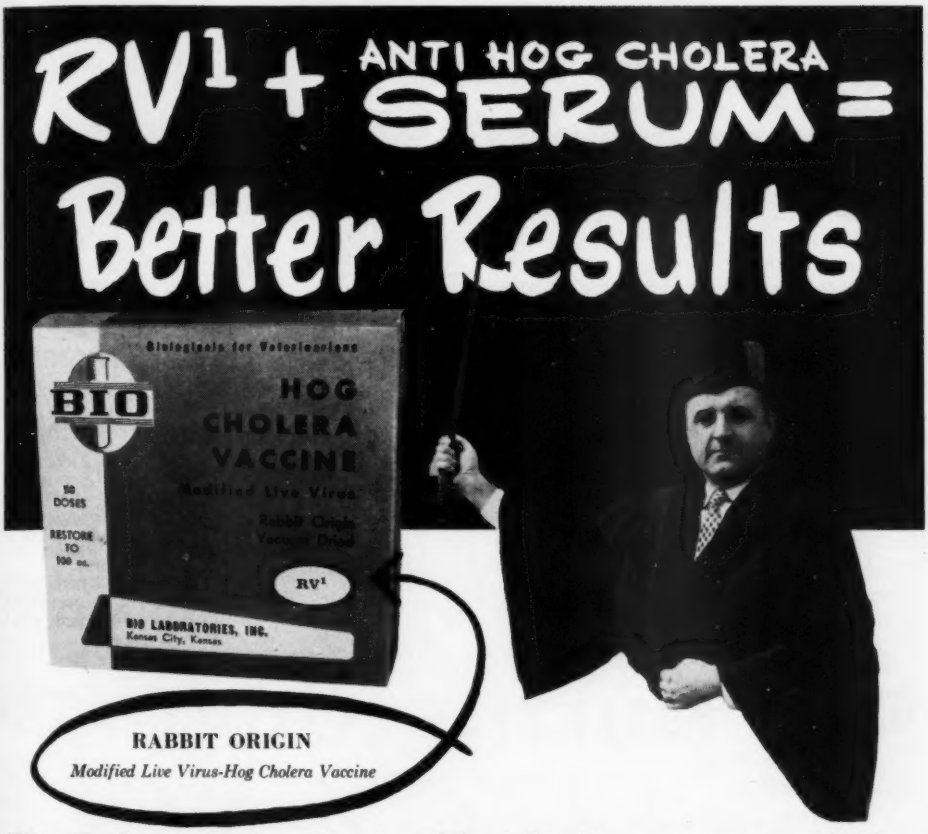
Massachusetts

The Massachusetts Board of Registration in Veterinary Medicine will hold examinations for registration in June 25-27, 1959 at the University of Massachusetts, Amherst. All inquiries should be directed to Dr. Edward A. Blake, secretary, Board of Registration in Veterinary Medicine, Room 33, State House, Boston 33, Massachusetts.

Smith Joins Kansas Staff

Dr. James Donovan Smith recently joined the Kansas State College staff as an instructor in the department of surgery and medicine.

Doctor Smith came to Manhattan from Hutchinson where he has been practicing veterinary medicine. A former K-Stater, Doctor Smith received his B.S. in 1956 and his D.V.M. in 1958.



Bio Laboratories is steadfast in its recommendation that hog cholera serum should be simultaneously administered with Rabbit Origin, Hog Cholera Vaccine. In accepting this recommendation, you will be accepting a larger margin of safety during vaccination, and more gratifying results in the months that follow. The standard dosage is 2cc RV' (Modified Live Virus, Vacuum Dried, Rabbit Origin, Hog Cholera Vaccine) with the simultaneous injection of 10cc's Anti-Hog Cholera Serum.

BIO Laboratories

KANSAS CITY, KANSAS

Indiana Group Holds Symposium

A unique facet of the Central Indiana Veterinary Medical Association's public relations program was put into play March 11, when the group sponsored a Rabies Symposium. The program consisted of a dinner meeting with each member of the veterinary group inviting a physician and his wife. Some 107 attended the affair.

Included in the highly informative program was a movie on rabies, remarks covering incidence at the local and national level, the background of development of the duck-embryo rabies vaccine, immunization and prophylaxis with vaccine. A question and answer period was included in the program.

Examination of Ascitic Fluid

In the article bearing the above title VETERINARY MEDICINE, 54:141 [March] 1959), the caption under figure 1 contained a typographical error. The word *granular* should be changed to read *glandular*.

You'll do better with Oster the Veterinarian's Clipper

Model A-2

Humane, efficient clipping and surgical shaving are easier, faster and more profitable with the smoother-running OSTER clipper. Detachable cutter head permits use of all sizes of cutting blades to do all clipping jobs the professional way.

John Oster Manufacturing Co.
5055 N. Lydell Avenue
Milwaukee 17, Wisconsin, U.S.A.

CURTS **MULTI-SCOUR** CURTS

"Junior" Bol-Tabs

— 5 active ingredients with 5-way action in treating calf scours —

Phthalylsulfacetamide	20 gr.	Inhibits infection
Sulfathiazole	20 gr.	Adsorbs toxins
Tannins (extracted)	20 gr.	Coagulant
Alumina hydrate	20 gr.	Demulcent
Compound chalk powder	20 gr.	Antacid

Distinctive formula—size—shape—color—Available only from the Veterinarian—Your client will return to you for scour medication.

Enthusiastically used—recommended—dispensed by Veterinarians throughout the country. **MULTI-SCOUR** is a money-maker for the clinical practitioner.

Suggested dose: To each 150 pounds body weight—4 or 5 bol-tabs the first day and 2 or 3 the second day. Continue or repeat if or as necessary.

Package: Cartons of 100 and 500

order from your nearest CURTS distributor or direct

CURTS Laboratories, Inc.

Manufacturers of Veterinary Pharmaceuticals Since 1918

71 Central Avenue Kansas City 18, Kansas

NEOJEL
PATENT PENDING

makes the difference...in

NEO-VAC

ERYSIPELAS-BACTERIN

...and here's why it makes a difference

★ **Longer Immunity**
★ **Well Tolerated**
★ **Lower Dosage**

DIAMOND LABORATORIES
DES MOINES • IOWA

when

urinary

tract

infection

is suspected

FURADANTIN® ORA-BOLS™ veterinary

brand of nitrofurantoin

new, exclusive veterinary dosage form

pleasant tasting ▪ easily administered ▪ readily retained

In small-animal urinary tract infections, FURADANTIN swiftly achieves high bactericidal concentrations in the urine, and in a high percentage of cases eliminates incontinence, dysuria, frequency, and straining. Of 32 dogs and cats recently treated,[1] 29 showed rapid clinical improvement. Often, there is marked improvement by the 4th day and complete recovery in 7 to 14 days.[2]

In canine tracheobronchitis, FURADANTIN given for 5 days stopped the coughing in 95% of 75 cases; in some dogs, complete symptomatic relief was gained in 48 hours.[3]

COMPOSITION:

Each FURADANTIN ORA-BOLS provides FURADANTIN 50 mg. in an excipient containing dextrose.

SUPPLIED:

Bottle of 100 scored 50 mg. ORA-BOLS. FURADANTIN also is available as: 10 mg. and 100 mg. scored tablets, bottles of 100, and Oral Suspension containing 5 mg. FURADANTIN per cc., bottle of 60 cc.

REFERENCES: 1. Mosier, J. E., and Coles, E. H.: Vet. Med. **53**:649 (Dec.) 1958. 2. Belloff, G. B.: Calif. Vet. **9**:27 (Sept.-Oct.) 1956. 3. Mosier, J. E.: Vet. Med. **52**:445 (Sept.) 1957.

Available through your professional veterinary distributor.

NITROFURANS—a *new* class of antimicrobials—neither antibiotics nor sulfonamides

ORA-BOLS™ is the Eaton trade mark for small, bolus-shaped tablets.

EATON LABORATORIES, NORWICH, NEW YORK

Cyanamid reports to the veterinarian

A recent review of data, plus additional trials by the Cyanamid Technical Department have shown that swine herds brought to maximum health with Chlortetracycline are better able to withstand stress.

They do better...have fewer setbacks, fewer "breaks."

This is important, especially in minimizing the stress of vaccination against hog cholera and erysipelas. Conditioning pigs with Chlortetracycline pays off for the veterinarian and his client.

DERAVET* is a good dosage form to use; ¼ pound per 100 pounds of feed for 3 days before and 7 days after vaccination.

DERAVET contains 10 Gms. Chlortetracycline per pound. Available in 5 pound cans and 25 pound bags.

*DERAVET Chlortetracycline
American Cyanamid Company,
New York 20, N.Y.

CYANAMID
DERAVET

Specifically for
RESISTANT INSECT CONTROL

VET-KEM BRAND INSECTICIDES

NEW 1959 FORMULA

KEM-DIP

GIVES FASTER TICK KILL

Controls Resistant

Brown Dog Ticks and Fleas

new flexible spout makes pouring easy . . .

NEW 1-gal. Lined Can.

KEM-DIP . . . based upon **entirely new chemicals** developed in the VET-KEM laboratories, gives positive control of resistant brown dog ticks.

- KILLS ENGORGED TICKS
- SPECTACULAR ON FLEAS
- LONG EFFECTIVE RESIDUAL ON BOTH DOGS AND PREMISES
- EASY, ECONOMICAL TO USE
- HAS PLEASANT ODOR

KEM-TOX
Livestock Dip and Spray

SCATTER BAIT
Housefly Killer

KEM-SMEAR
Screw Worm Remedy

KEMAL
Malathion-Toxaphene Cattle Spray

KEM-DUST
Dog & Cat Powder

KEM-DIP
Kills Brown Dog Ticks

- SOLD ONLY TO
- GRADUATE VETERINARIANS
- THROUGH ESTABLISHED
- ETHICAL DISTRIBUTORS.

VET-KEM DISTRIBUTORS

H. C. BURNS CO.
Oakland, Cal.
Portland, Ore.
Huntington Pk., Cal.
BARBER & COCHRAN
Oklahoma City
CHICAGO VET. SUPPLY
Chicago, Ill.
COLUMBUS SERUM CO.
Columbus, Ohio
EDWARDS VET. SUPPLY
Kansas City, Mo.
ELLFIELD LABS.
Riverdale, Md.
FORT DODGE LABS.
Fort Dodge, Ia.
GOSHEN LABORATORIES
Goshen, N. Y.
HOLMES SERUM CO.
Springfield, Ill.
L. A. MOSHER CO.
Atlanta, Ga., Albany, Ga.
Miami, Fla.
Memphis, Tenn.
Louisville, Ky.
Raleigh, N. C.
STANDARD VET. SUPP.
New York, N. Y.
STEVENSON, TURNER & BOYCE, Guelph, Can.
TEXAS VET. SPECIALTIES
Austin, Texas

Developed and Manufactured by
VET-KEM LABORATORIES, INC.
A Division of Agricultural Specialties
12200 Denton Drive • DALLAS, TEXAS

Merck Names New Executives

L. T. Spence has been named products manager of medicated feed supplements, and H. S. Stockwell, products manager for Merck nutritional items, the firm has announced.

Spence received his bachelor of science degree in animal husbandry from Rutgers University.

Stockwell graduated from Huron College and taught high school business law before joining Merck in 1951.

Veterinarians Fete Students

The senior students of the University of Illinois College of Veterinary Medicine and their wives were guests at a dinner meeting of the Eastern Illinois Veterinary Medical Association, March 5, at Champaign. Program speakers included Dr. T. H. Brasmer, Danville; Dr. R. K. Shideler, Danville; Dr. R. W. Kennedy, Colfax; and Dr. A. L. Starkey, McLean, who spoke on ethics, records, public relations and dispensing.

TOTAMIN

T. M. Reg.

- Amino Acids
- Minerals and Vitamins

SOLD THROUGH THE VETERINARIAN

Write for an illustrated folder today or ask your distributor.

NUTRITIONAL MINERALS

Box 505, 404 E. 12th St.

Sioux Falls, S. Dak.

SPECIAL INTRODUCTORY OFFER

to veterinarians just starting in practice!

DAILY LOG

RECORD BOOK FOR VETERINARIANS

By taking advantage of our Special Introductory Offer, substantial savings can be made in organizing the business side of your practice. WRITE for Introductory Offer information today.

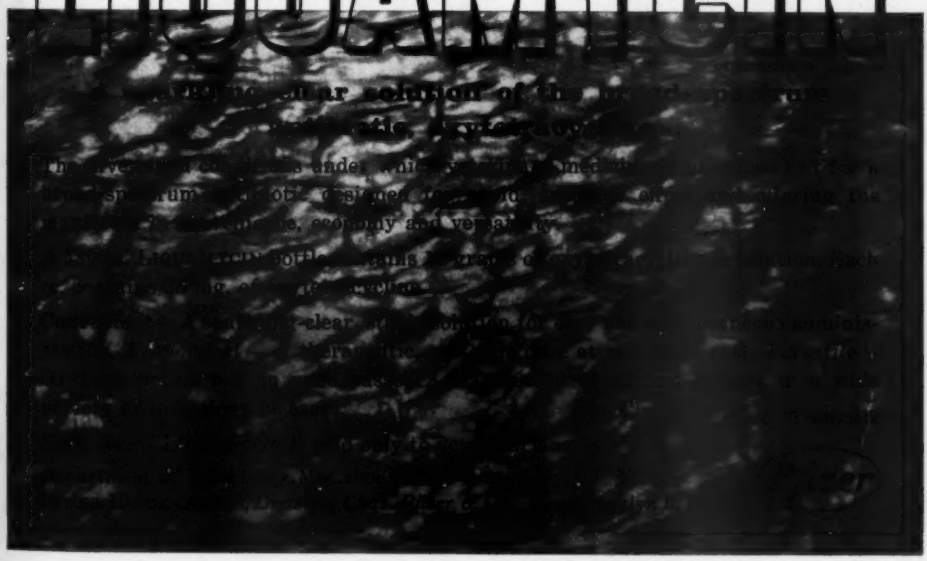
COLWELL

THE COLWELL COMPANY

283 University Ave., Champaign, Ill.

New—for instantaneous use

LIQUAMYCIN*



in stubborn cases o

DIATHAL offers these unique benefits:

prompt, highly selective suppressive (anticholinergic) action on gut motility and hypersecretions | convenience and ease of intramuscular administration | prevention of excessive fluid loss and dehydration | rapid relief of nausea and vomiting associated with gastroenteritis | anti-inflammatory action | broad-spectrum antibiotic coverage | protective action against secondary bacterial invaders

DIATHAL is indicated for use in dogs, cats, and horses, excepting horses destined for human consumption.

packaging DIATHAL Injection, 10 cc. vials, boxes of 1 and 6

DIATHAL,® procaine penicillin G in dihydrostreptomycin sulfate solution with diphemanil methylsulfate.

SCHERING CORPORATION • BLOOMFIELD, NEW JERSEY V-DL-J-239

diarrhea

INJECTABLE

DIATHAL

clinical investigators report more than 90% effective*

also relieves nausea and vomiting associated with gastroenteritis

Schering

*Based on 300 cases reported to Clinical Research Division, Schering Corporation.

Many companies are trying to "imitate and duplicate but have failed to formulate!"

GENUINE

OCUROL-VET

The pinkeye medicine of choice among leading veterinarians around the world. Order from your favorite veterinary distributor.

THE OCUROL-VET COMPANY ★ SABINAL, TEXAS

M·A·C

Quick relief for Bone, Bursal or Tendon Lameness

Single Bottle.....$2.00
3 and 1 free.....5.00
6 and 2 free.....9.00
12 and 4 free.....17.00
24 and 4 free.....28.00

CARTER-LUFF CHEMICAL CO.
Hudson, N. Y.

INJURED TEATS
SCAB TEATS
STENOSIS
POST-OPERATIVELY

To maintain unrestricted milk flow and provide medical antisepsis are of prime importance in treating teat troubles. Dr. Naylor Dilators accomplish these 2 objectives specifically with this 2-WAY ACTION:

1. MECHANICAL ACTION . . . gently supports sphincter and teat mucosa—keeps teat open and promotes easier, natural milking. Positive retention in small or large teats.

2. MEDICAL ACTION . . . *Sulfathiazole* released slowly from within the Dilator provides broad antimicrobial protection; combats infection and reduces swelling; minimizes ascending inflammation and promotes healing.

WITH ANTIBIOTICS . . . Saturated with your favorite udder infusion antibiotic, Dr. Naylor Dilators are an ideal vehicle for additional local medication following teat surgery.

Available from your ethical supplier or write Dept. "P"
H. W. NAYLOR CO., Morris, N. Y.

Veterinarians Honor Swine Growers

The Kansas Veterinary Medical Association presented an award to the Kansas Swine Improvement Association, March 28, during the Animal Industries Meeting at Kansas State University in Manhattan. The award is to assist in the development of the Boar Testing Station constructed in the past year at the University.

The Kansas Veterinary Medical Association is presenting the awards to help establish better swine health in Kansas.

In accepting the award, the Swine Improvement Association pointed to great strides now being taken by allied groups in attaining the objectives being sought by all interested animal husbandrymen.

Roberts to California Post

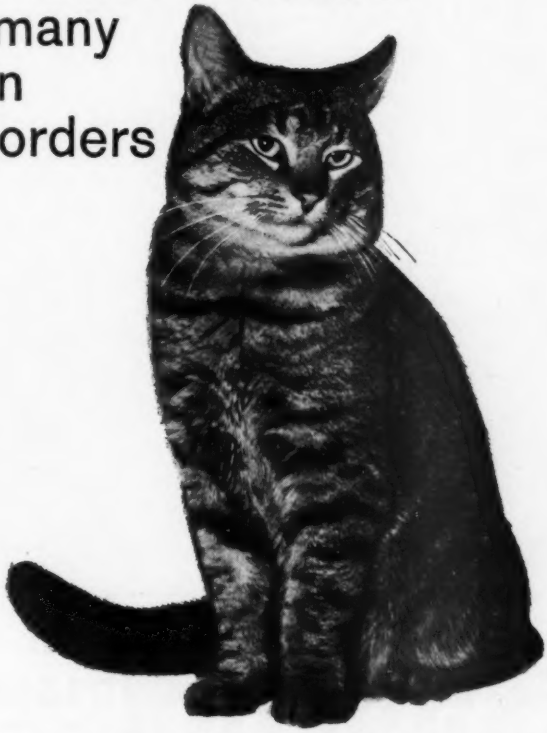
Dr. Seymour R. Roberts, of Richmond, California, has been appointed to the California Board of Examiners in Veterinary Medicine. The term is for four years. Dr. Roberts is currently secretary of the Bay Counties Veterinary Medical Association.

Dr. Naylor

Medicated Teat Dilators

SUPPLIED:
Dispensing vials—16's
Labled packages—45's

For broader control
of many
skin
disorders



Vioform®-Hydrocortisone

Cream

reduces inflammation, relieves itching, controls scaling in chronic and acute eczematous conditions

provides antibacterial and fungicidal action against primary and secondary invaders

promotes rapid healing

Vioform-Hydrocortisone Cream has low toxicity

It may be applied frequently for combating fungal infections, including ringworm. Well tolerated in cats.

Sold only to graduate veterinarians

Supplied: *Cream* (water-washable base), containing Vioform® (iodochlorhydroxyquin CIBA) 3% and hydrocortisone 1%; tubes of 5 and 20 Gm.

8734822VR

C I B A

SUMMIT, N.J.

Now "capsule shy" pets can worm themselves with tasty CANDIZINE Tablets

(pet candy with piperazine)

Clients dread wrestling their pets to take capsules. So for pets with large roundworms, dispense palatable CANDIZINE Tablets and let the dog or cat worm itself.

Utilizing a tasteless grade of piperazine phosphate in a base of blended food and flavor ingredients, CANDIZINE is readily eaten by most small animal patients —either in tablet form or crushed and mixed with the feed. And CANDIZINE requires no fasting, eliminating pre-treatment fuss and bother.

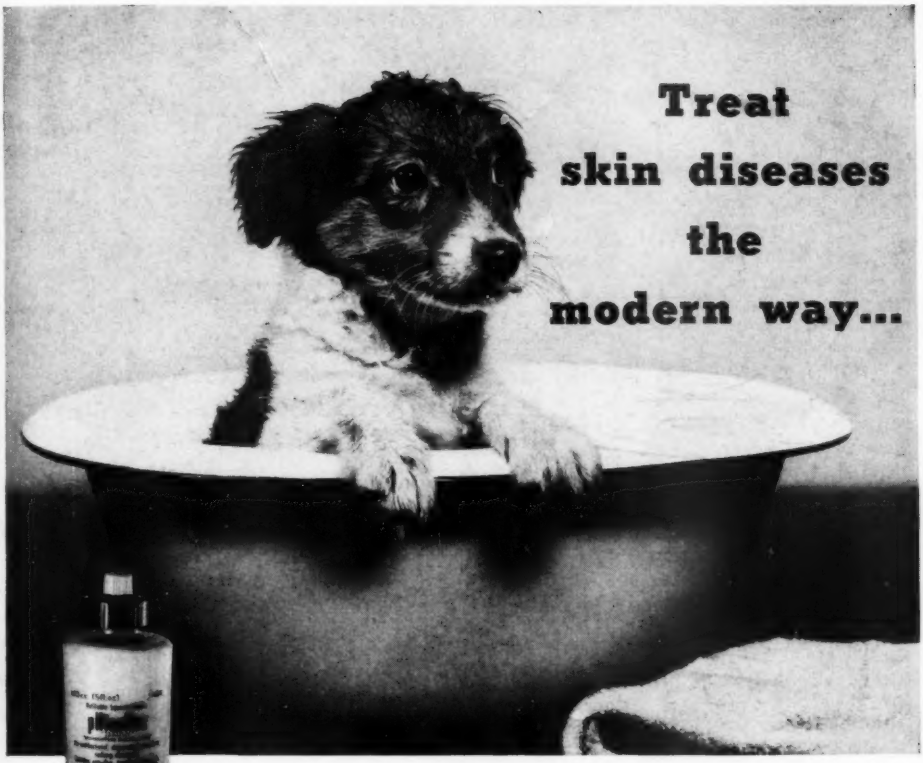
Each CANDIZINE tablet contains 384 mg. piperazine phosphate (equivalent to 161 mg. piperazine). Offer one tablet for each 8 lbs. body weight. Repeat in 10-14 days in severe infestations. Candizine is also indicated for certain zoo and fur-bearing animals.

Candizine supplied in attractive prescription vials: 20—5 tablet vials

Norden®

NORDEN LABORATORIES

LINCOLN, NEBRASKA



WITH **pHisoHex®**

ANTISEPTIC DETERGENT

In the treatment of nonspecific and bacterial dermatoses and even parasitic diseases, it is important that the cat or dog be bathed with a gentle nonirritating antiseptic detergent. In addition to its safe, gentle and effective detergency, pHisoHex leaves a residual bacteriostatic film on the skin.

PRICES ON REQUEST

pHisoHex, trademark reg. U.S. Pat. Off.

Winthrop LABORATORIES
NEW YORK 18, N. Y.

For prevention

of hog cholera

CORVAC Hog Cholera Vaccine

A standard, well-known, modified live virus hog cholera vaccine for use with 10 cc. of serum or 5 cc. of SERATRATE. CORVAC, like all other CSL products, is available only to the veterinary profession.

SERATRATE, H. C.

Hog Cholera Antibody-Concentrate

The globulin fraction of hyperimmune porcine blood, adjusted to at least twice the potency of anti-hog cholera serum. New convenience for modern practitioners, available now in 250 cc. vials cartoned in dozens.

CSL

CORN STATES LABORATORIES, INC.

1124 HARNEY STREET • OMAHA 2, NEBRASKA